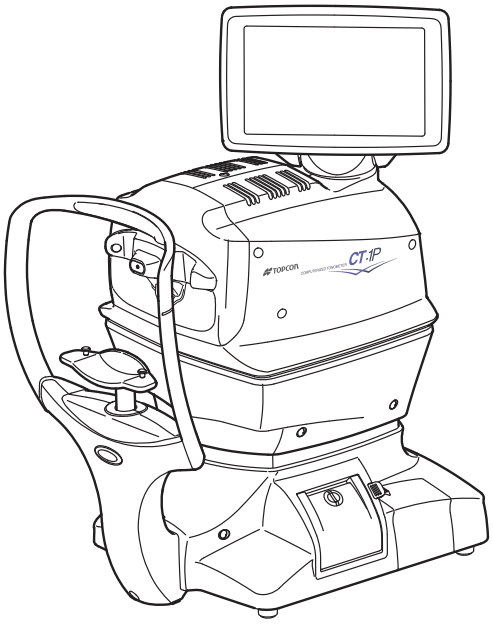
TOPCON



USER MANUAL
COMPUTERIZED TONOMETER

CT-1P
CT-1

INTRODUCTION

Thank you for purchasing the TOPCON Computerized Tonometer CT-1P/CT-1.

INTENDED USE / INDICATIONS FOR USE

Measured through the cornea based on the tension of the eye pressure within the eye ball, to provide information for diagnosis.

FEATURES

This instrument features the following:

- The position of the touch panel can be adjusted to accommodate the user's preferred position.
- Softer air puff for measuring intraocular pressure.
- Auto alignment function enables quick easy measurement under optimal conditions.

PURPOSE OF THIS MANUAL

To get the best use of the instrument, read GENERAL SAFETY INFORMATION and DISPLAYS AND SYMBOLS FOR SAFE USE.
Keep this Manual at hand for future reference.

- Since this product is a precision instrument, always use and keep it in a normally controlled living environment, within a temperature range of 10-40°C, humidity levels between 30-90% and an atmospheric pressure range of 700hPa-1,060hPa.
  The instrument should also be placed away from direct sunlight.
- To ensure smooth operation, install the instrument on a level floor free of vibrations. Also, do not place anything on the instrument.
- Connect all cables properly before using.
- Use the power at a rated voltage.
- When not in use, switch off the power source and apply the rubber cap and dust cover.
- For accurate measurement results, take care to keep the measuring window clean and free of fingerprints, spots and dust. Also, do not touch the measuring nozzle except during cleaning.

[CAUTION] Federal law restricts this device to the sale by or on the order of a physician.

CE
0123

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2. The contents of this manual are subject to change without prior notice and without legal obligation.
3. The contents of this manual are correct to the best of our knowledge. Please inform us of any ambiguous or erroneous descriptions, missing information, etc.

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GENERAL SAFETY INFORMATION

⚠ WARNINGS

Ensuring the Safety of Patients and Operators
When operating the instrument, do not touch the patient's eye or nose.
To prevent corneal damage, do not measure a patient with corneal disease or one who's had corneal surgery.
To prevent corneal damage, do not measure a patient wearing a contact lens. Tell the patient to remove the contact lens.
Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm. Wash hands after handling.

Preventing Electric Shocks and Fire
To avoid fire and electric shock, install the instrument in a dry place free of water and other liquids.
To avoid electric shock, do not insert metal objects into the instrument body through the vent holes or gaps.
To avoid fire and electric shock, do not put cups or other containers with liquids near the instrument.
To avoid fire in the event of an instrument malfunction, immediately turn OFF the power switch "○" and disconnect the power plug from the outlet if you see smoke coming from the instrument, etc. Don't install the instrument where it is difficult to disconnect the power plug from the outlet. Ask your dealer for service.

⚠ CAUTIONS

Ensuring the Safety of Patients and Operators
To avoid injury when operating the up/down button for the chinrest, be careful not to catch the patient's fingers.
The light emitted from this instrument involves potential risk; the longer the irradiation time, the more risk of damage to the eye. When the instrument operates with the maximum light volume, exposure for more than 2 hours will exceed the safety guideline.

Preventing Electric Shocks and Burns
To avoid injury by electric shock, do not open the cover. For repair, call your service engineer.
To avoid injury by electric shock when changing the fuse, turn off the power supply and pull out the power cable. Use the rated fuse.

Electromagnetic Compatibility (EMC)
This instrument has been tested (with 100/120/230V) and found to comply with IEC60601-1-2:Ed.3.0:2007. This instrument radiates radio frequency energy within standard and may affect other devices in the vicinity. If you have discovered that turning on/off the instrument affects other devices, we recommend you change its position, keep a proper distance from other devices, or plug it into a different outlet. Please consult your authorized dealer if you have any additional questions.

HOW TO USE THIS MANUAL

- Read the instructions on pages 7 to 11 before using the machine.
- Regarding connection to various devices, see "CONNECTING EXTERNAL I/O TERMINALS" on page 29.
- If you would like an overview of the system, begin by reading "BASIC OPERATIONS"(page 33).
- For setting various functions, see "SETTING FUNCTIONS ON THE SETUP SCREEN" on page 59.

GENERAL MAINTENANCE INFORMATION

USER MAINTENANCE

To maintain the safety and performance of the equipment, never attempt to do maintenance except for the items specified below. For details, follow the instructions.

FUSE CHANGE

For details, See “FUSE CHANGE” on page 106.

CLEANING THE MEASURING WINDOW GLASS

For details, See “CLEANING THE INSTRUMENT” on page 101.

CLEANING THE NOZZLE AND WINDOW GLASS INSIDE THE NOZZLE

Regarding the measuring nozzle and the glass surface inside the measuring nozzle, cleaning is allowed. For details, see "CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE"on page 102.

DISCLAIMERS

- TOPCON is not responsible for damage due to fire, earthquakes, actions or inactions of third persons or other accidents, or damage due to negligence and misuse by the user and any use under unusual conditions.
- TOPCON is not responsible for damage derived from inability to properly use this equipment, such as loss of business profits and suspension of business.
- TOPCON is not responsible for damage caused by operations other than those described in this User Manual.
- The device does not provide a diagnosis of any condition or lack thereof or any recommendations for appropriate treatment. The relevant healthcare provider is fully responsible for all diagnosis and treatment decisions and recommendations.

DISPLAYS AND SYMBOLS FOR SAFE USE

In order to encourage the safe use of the instrument and to avoid danger to the operator and others as well as damage to properties, warnings are described in the User Manual and marked on the instrument body.
We suggest you thoroughly understand the meaning of the following displays/icons and Safety Cautions, as well as read the Manual, and strictly observe the instructions.

DISPLAYS

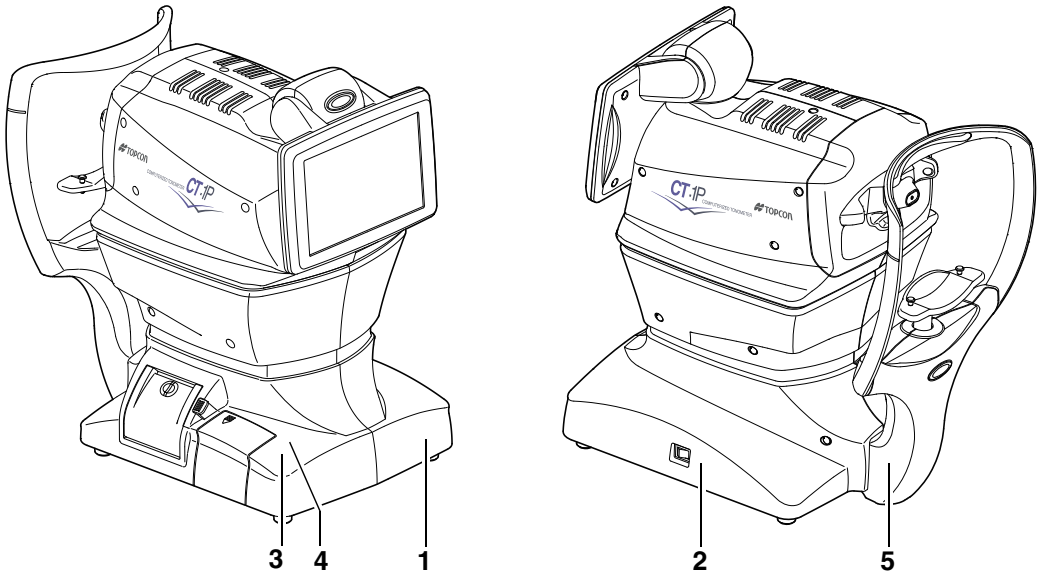
Display	Meaning
WARNINGS	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTIONS	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTES	Useful functions to know. Paying attention to these will prevent the noted problems.

SYMBOLS

Symbol	IEC/ISO Publication	Description	Description (French)
	IEC 60417-5032	Alternating Current	Courant alternatif
	IEC 60417-5008	Off (power: disconnection from the main power supply)	Éteint (courant: coupure avec le secteur)
	IEC 60417-5007	On (power: connection to the main power supply)	Allumé (courant: raccordement sur le secteur)
	IEC 60878-02-02	Type B applied part	Partie appliquée du Type B
	ISO 7010-W001	General warning sign	Symbole d'avertissement général
	ISO 7010-M002	Refer to instruction manual/ booklet	Voir le manuel/la brochure

POSITIONS OF WARNING AND CAUTION INDICATIONS

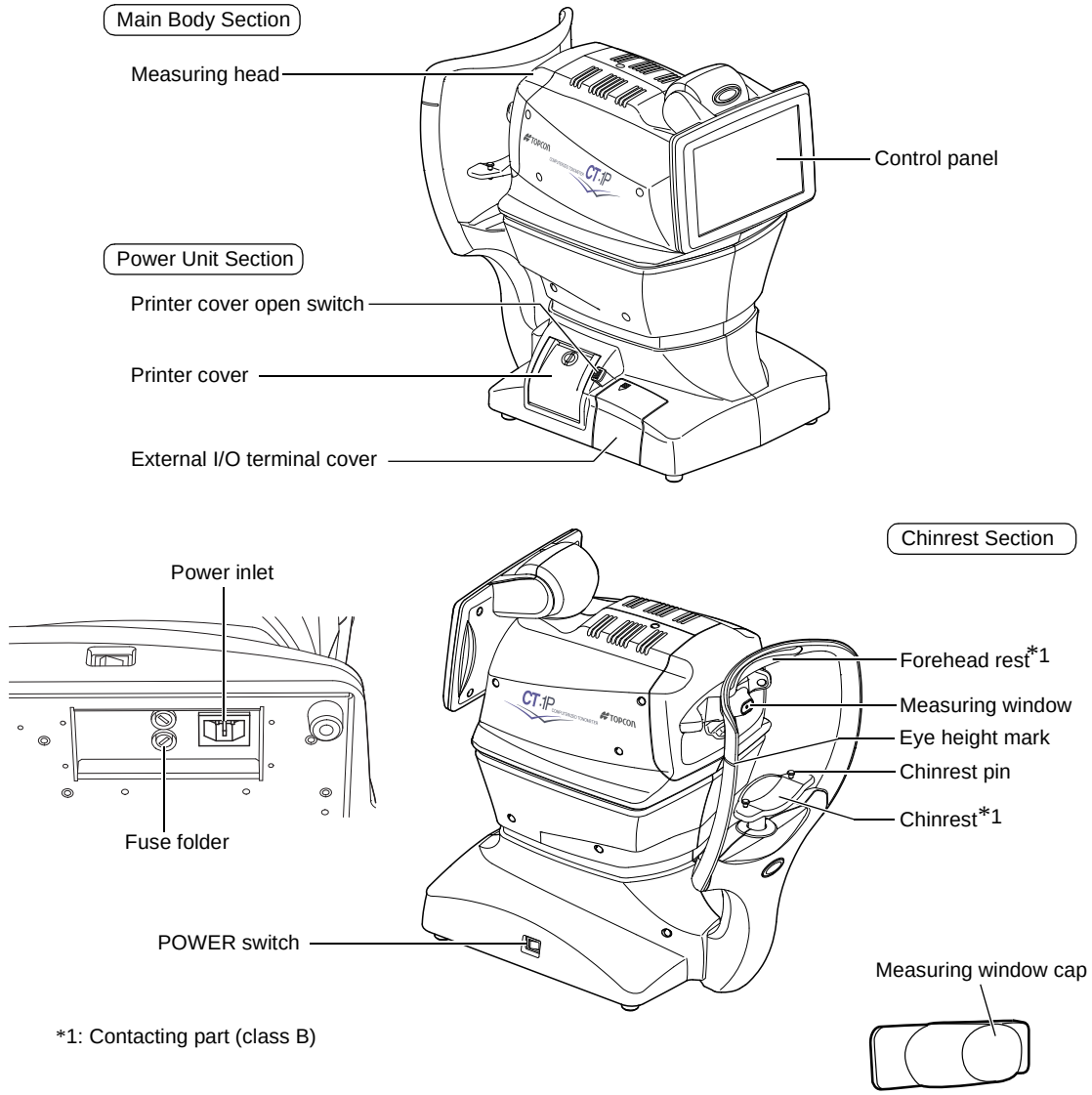
To secure safety, this equipment provides warnings.
Correctly use the equipment following these warning instructions. If any of the following marking labels are missing, please contact your dealer or TOPCON at the address stated on the back cover.



No.	Label	Meaning
1		**WARNING** To avoid injury caused by electric shock, do not open the cover. Ask your dealer for service.
2		**WARNING** Electric shock may cause burns or a possible fire. Turn the power switch OFF and unplug the power cord before replacing the fuses. Replace only with fuses of the correct rating.
3		**CAUTION** When operating the chinrest up/down switch, be careful not to pinch the patient's hand. The patient may be injured.
4		**CAUTION** Be careful not to hit the patient's eyes or nose with the instrument during operation.
5		Degree of protection against electric shock: TYPE B EQUIPMENT

COMPONENTS

COMPONENT NAMES



*1: Contacting part (class B)

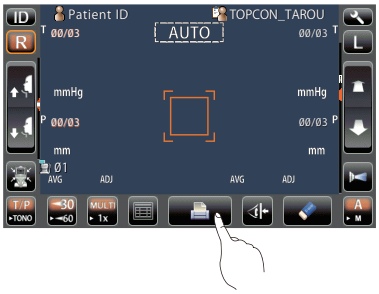
COMPOSITION OF PARTS WHICH CONTACT THE HUMAN BODY

Forehead rest : Silicone rubber
Chinrest : Acrylonitrile butadiene styrene resin

OPERATION METHOD OF CONTROL PANEL

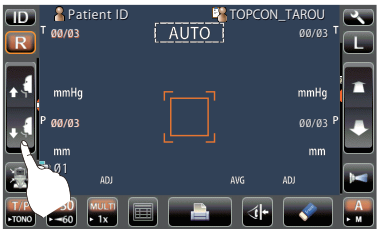
NOTES	• The control panel is a touch panel. Do not use any sharp tools; e.g. ball point pen. • Avoid tapping to deferent points simultaneously on the control panel.

Tap → To select any relevant item.



Touch the screen softly with a finger.

Continue to press → Used for continuous moving. (Moving of chinrest and measuring head)



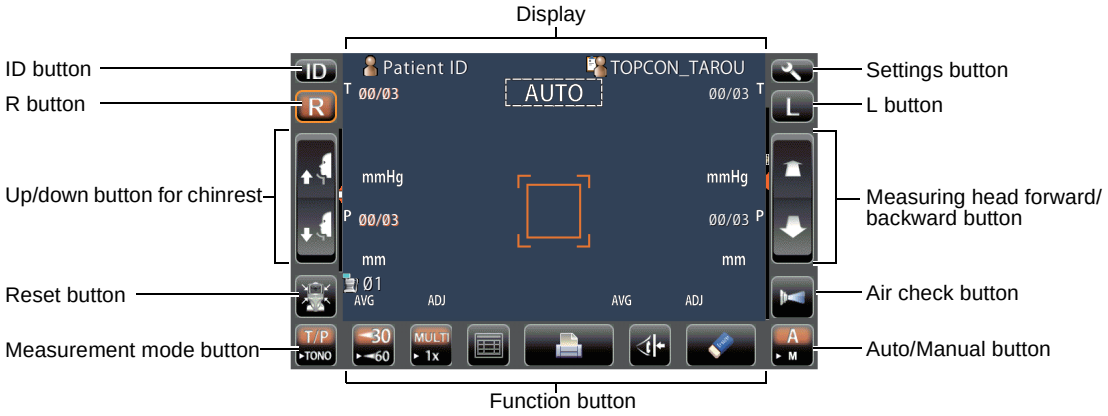
Continue to touch the screen softly with a finger.

CONTROL PANEL COMPONENTS

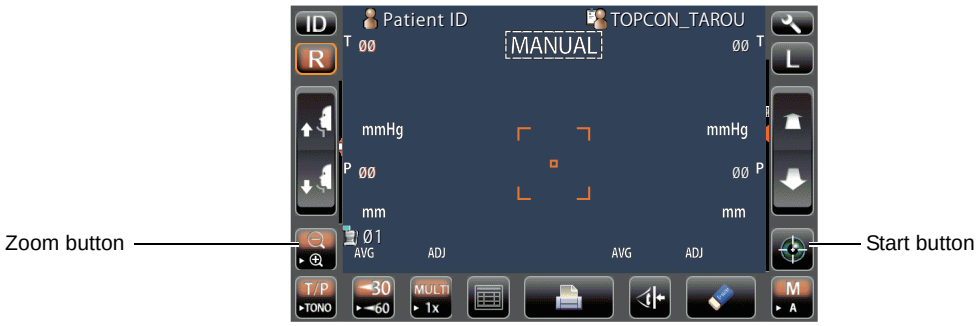
The control panel is designed as a touch panel for performing various operations and settings. It displays images and shows information, including set conditions and measurement results.

CT-1P

AUTO MODE

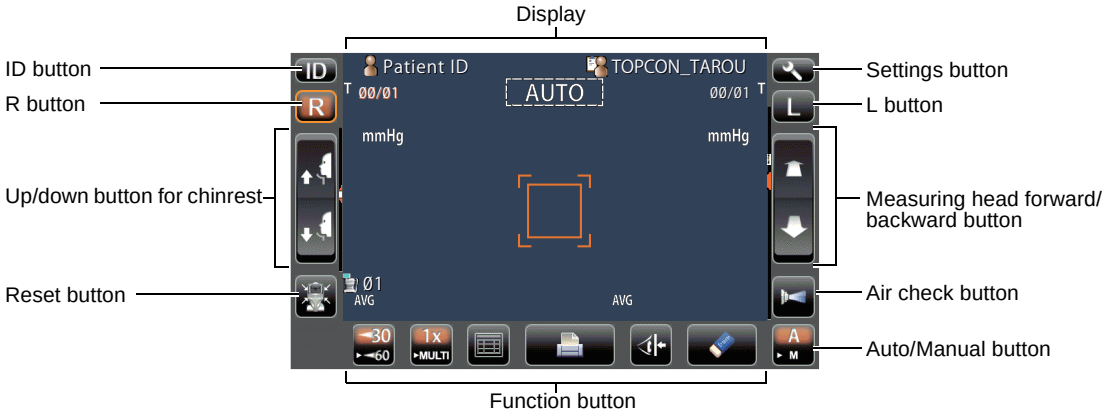


MANUAL MODE



CT-1

AUTO MODE



MANUAL MODE

ID button..... Input the patient ID (up to 13 characters) and operator ID (up to 13 characters). However, if no patient ID is inputted, the patient No. of each patient is allocated automatically. (See page 98 for details.)

Measurement mode button..... Selects a measurement mode from TONO and T/P. (only in CT-1P)

R button/L button ..... Selects the right/left eye. By tapping the button, the main body moves to the selected direction.
The selected button is framed in orange. The layout where the R/L button is displayed reverses according to the position of the control panel.

Up/down button for chinrest... Moves the chinrest up/down.

End button ..... Displayed under Auto mode: Moves the chinrest and measuring head to the measurement last position.

Zoom button..... Displayed under Manual mode: Enlarges the patient's eye display.

Forward/Backward button for measuring head ..... Moves the measuring head closer to/away from the patient's eye.

Air check button..... Displayed under Auto mode. Checks whether the measurement system of the instrument operates properly.

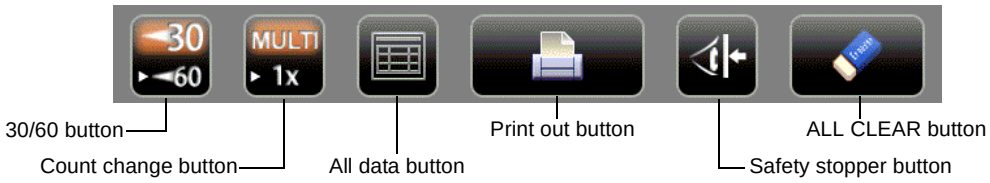
Start button..... Displayed under Manual mode. Starts measurement.

Auto/Manual button..... Selects Auto/Manual mode (A: Auto mode, M: Manual mode). The name of the selected mode (Auto/Manual) is displayed on the control panel.

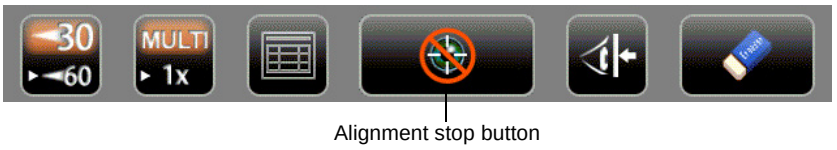
Settings button..... Displays the SETUP screen.

FUNCTION BUTTON

UNDER MEASUREMENT STANDBY



DURING MEASUREMENT



30/60 button ..... Switches between 1-30 range and 1-60 range.

Count change button ..... Switches the number of measurements in the AUTO measurement as follows:

* Measures the number of times as previously set.
* One time measurement (Before shipment, the default setting is "one time measurement")

When R/L move mode is set to Full Auto or Auto(RL), after measuring the first eye, the main body automatically moves to the settings for the other eye.

All data button ..... Displays all measurement data on the screen.

Print out button ..... Displays on measurement stand-by and prints measurement results. Tap the button when no measurement data is present to feed the paper.

Safety stopper button ..... Switches to the setting screen of the nozzle limit position to prevent the measuring window glass from hitting the patient's eye during the measurement.

ALL CLEAR button..... Clears all measurement data.

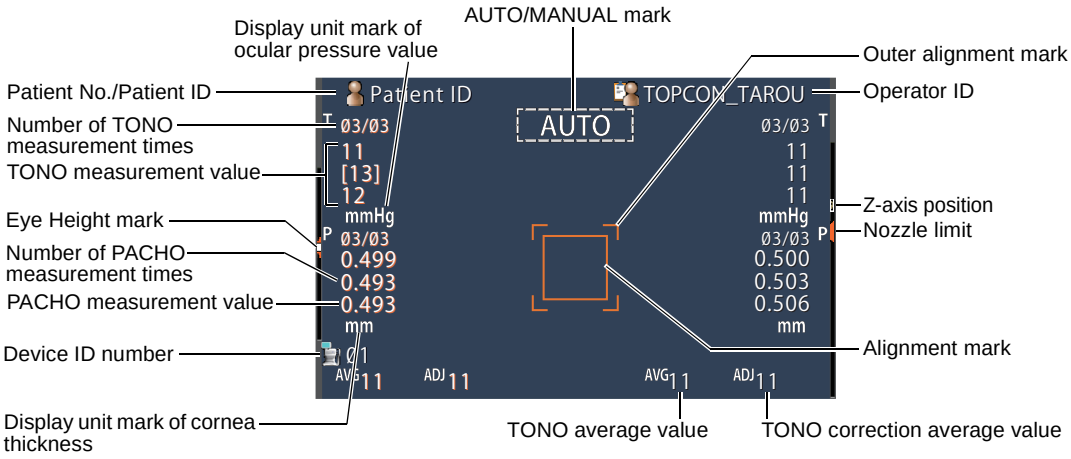
Alignment stop button

..... Displayed during a measurement, the alignment operation is stopped and the measuring head moves backward.

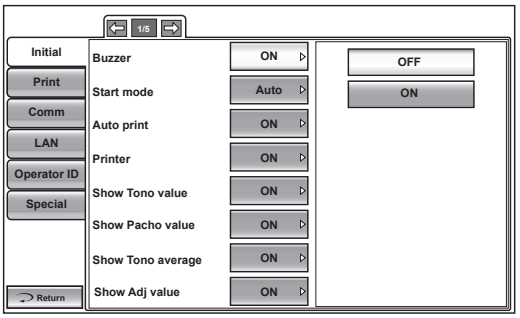
MONITOR SCREEN

CT-1P

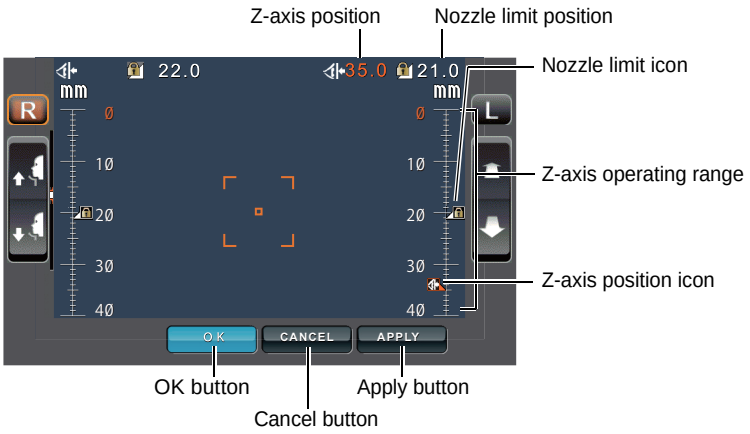
MEASUREMENT SCREEN



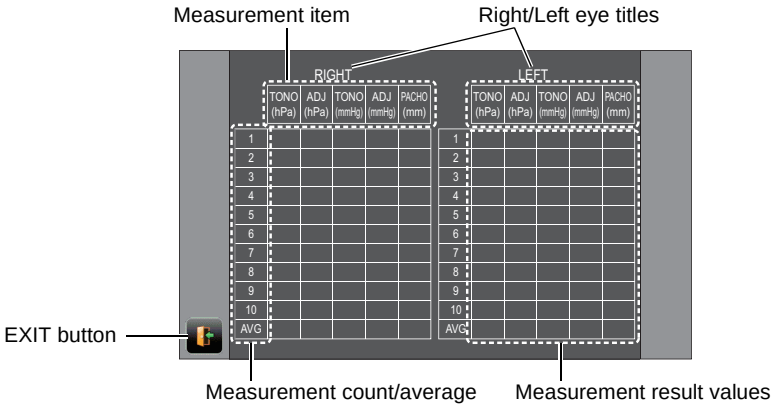
SETUP SCREEN



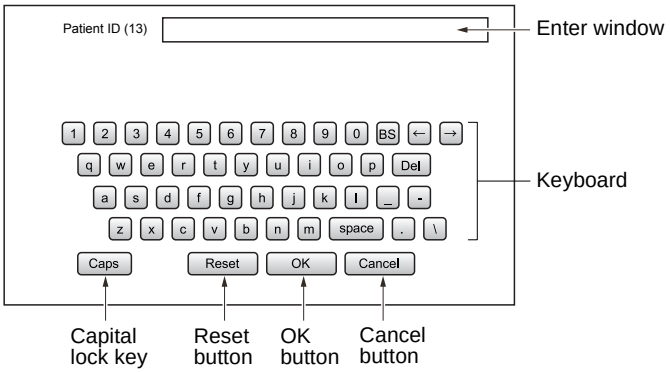
SAFETY STOPPER SCREEN



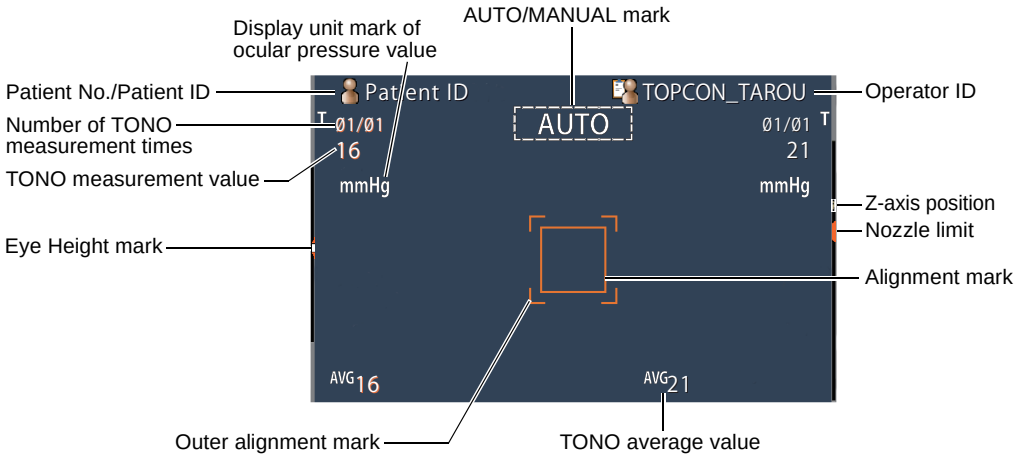
ALL DATA SCREEN



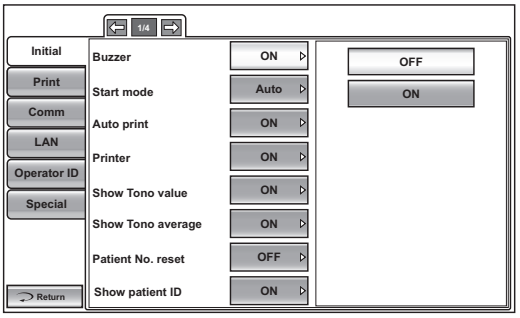
PATIENT ID INPUT SCREEN


Patient ID (13)
Enter window
1 2 3 4 5 6 7 8 9 0 BS ← →
q w e r t y u i o p Del
a s d f g h j k l _ -
z x c v b n m space . \
Keyboard
Caps
Reset
OK
Cancel
Capital lock key
Reset button
OK button
Cancel button

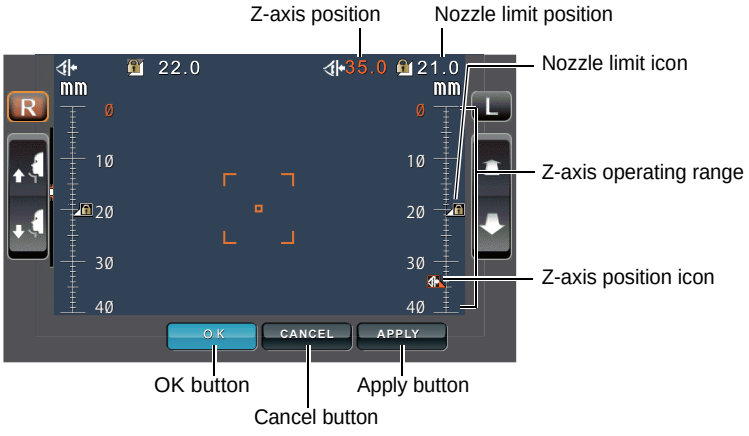
MEASUREMENT SCREEN



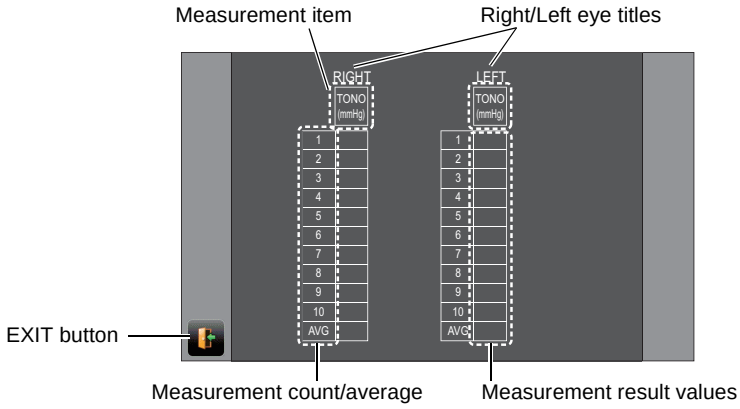
SETUP SCREEN



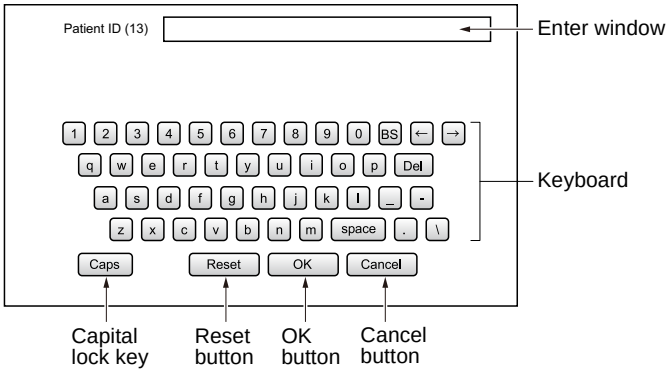
SAFETY STOPPER SCREEN



ALL DATA SCREEN



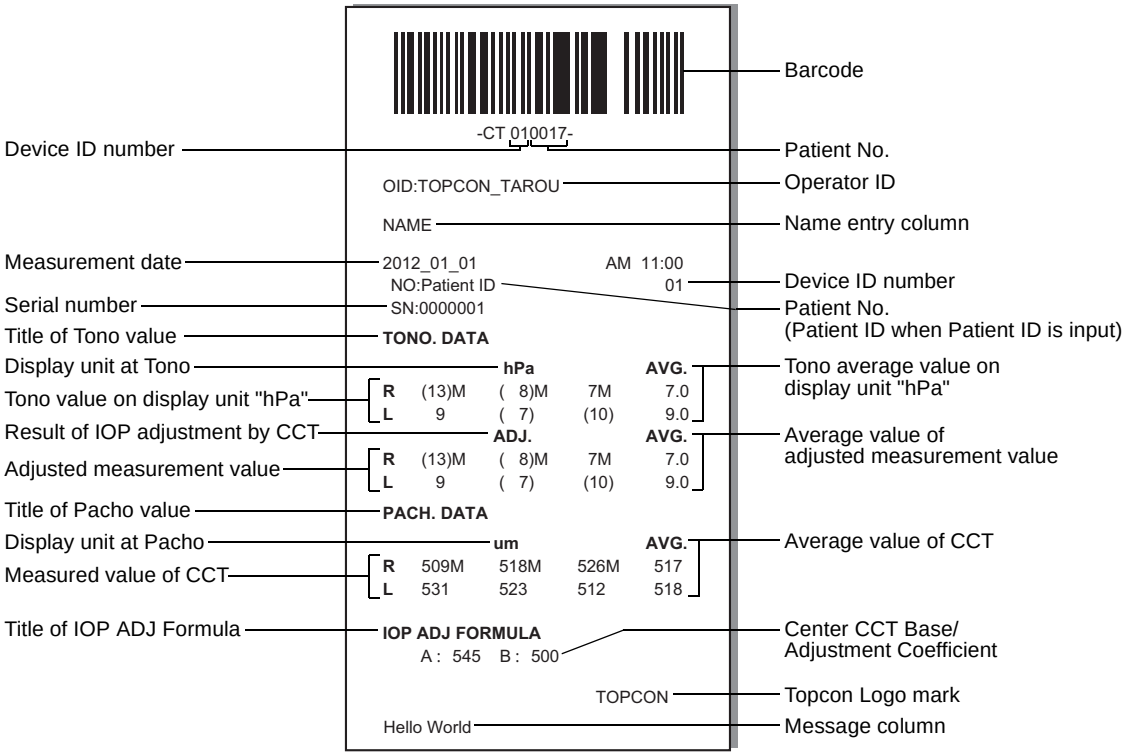
PATIENT ID INPUT SCREEN


Patient ID (13)
Enter window
1 2 3 4 5 6 7 8 9 0 BS ← →
q w e r t y u i o p Del
a s d f g h j k l _ -
z x c v b n m space . \
Keyboard
Caps
Reset
OK
Cancel
Capital lock key
Reset button
OK button
Cancel button

PRINTER OUTPUT

Printed example when "Printer order" of "Print" is set to "SIMPLE"

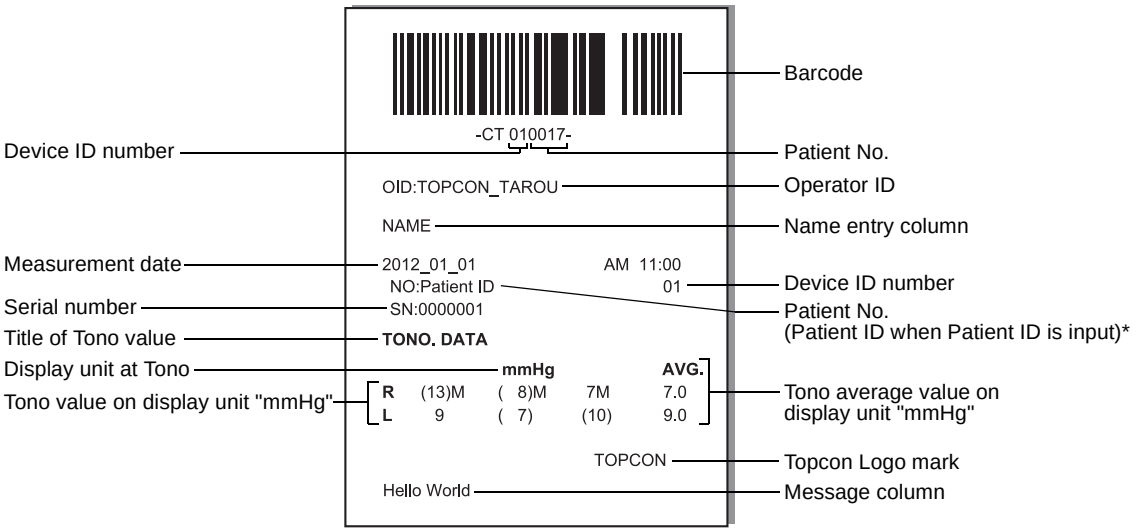
CT-1P



- As for the patient No., the result of the printing will differ depending on whether the patient ID is inputted or not inputted.
  Input : Patient ID is printed.
  Not input : Patient No. (starts from 0001, automatically added +1 upon completion of measurement) is printed.

NOTES	• The "M" mark is printed on the value measured by manual measurement. (In the error of ERR, OVER, etc., the "M" mark is not printed.) • The value with low reliability is outputted with the parenthesis notation.

CT-1



* As for the patient No., the result of the printing will differ depending on whether the patient ID is inputted or not inputted.

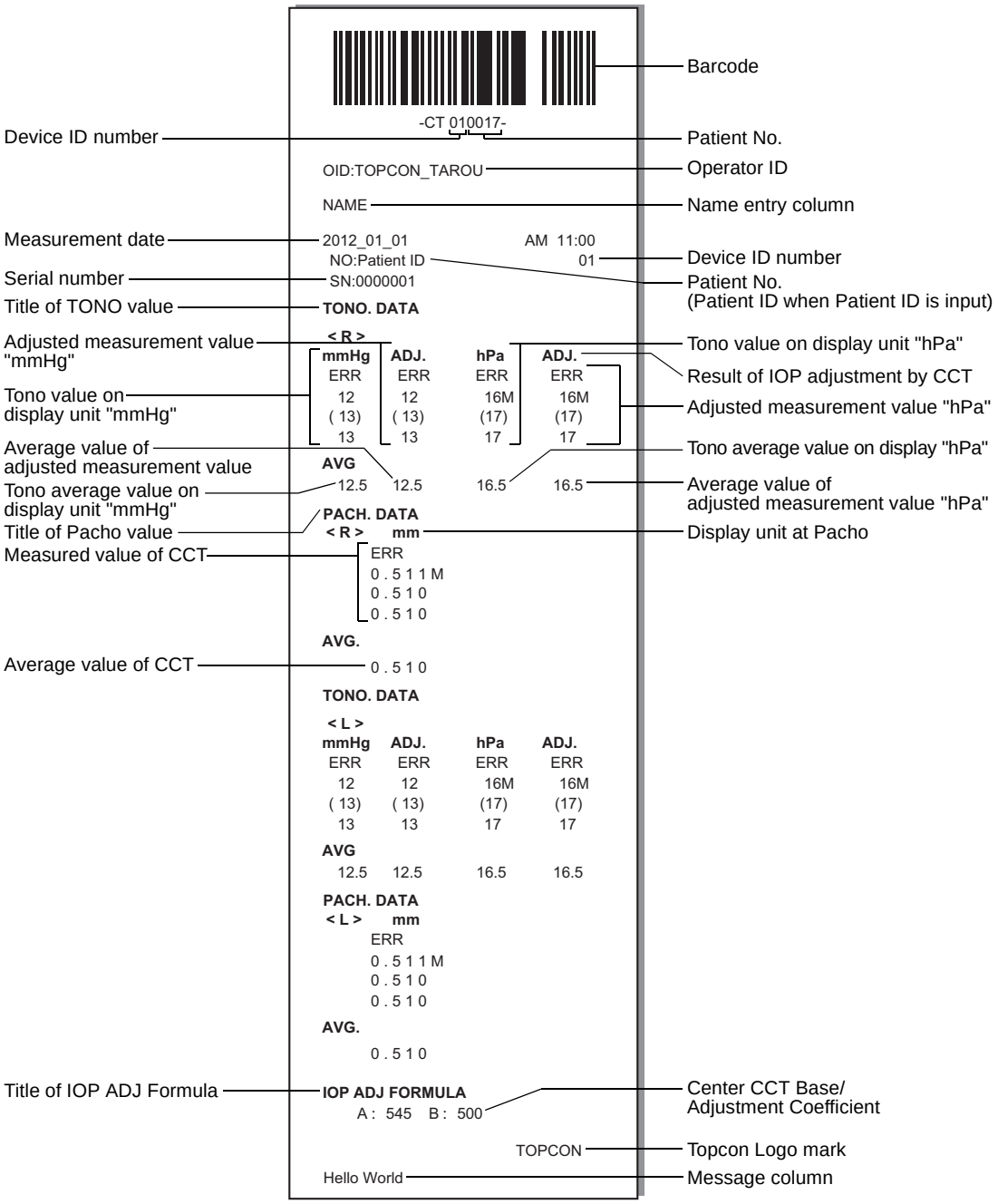
Input : Patient ID is printed.

Not input : Patient No. (starts from 0001, automatically added +1 upon completion of measurement) is printed.

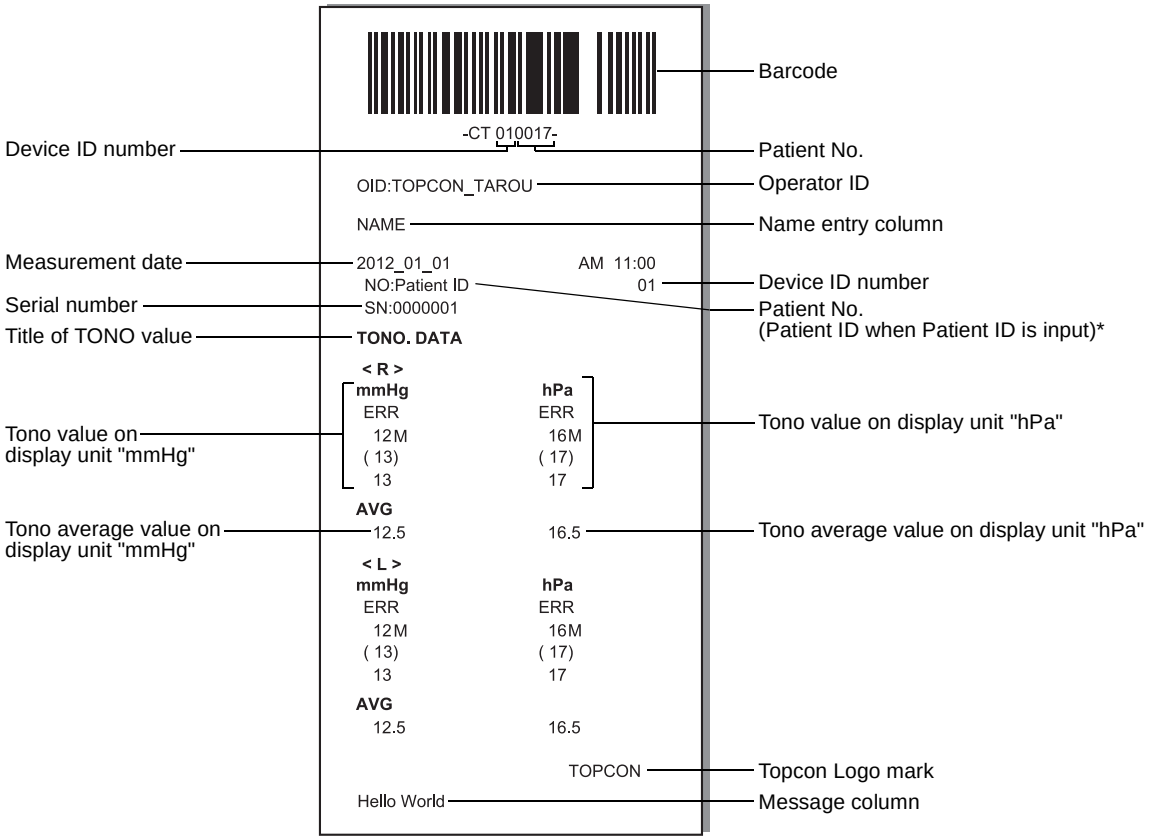
NOTES	• The "M" mark is printed on the value measured by manual measurement. (In the error of ERR, OVER, etc., the "M" mark is not printed.) • The value with low reliability is outputted with the parenthesis notation.

Printed example when "Printer order" of "Print" is set to "R/L"

CT-1P

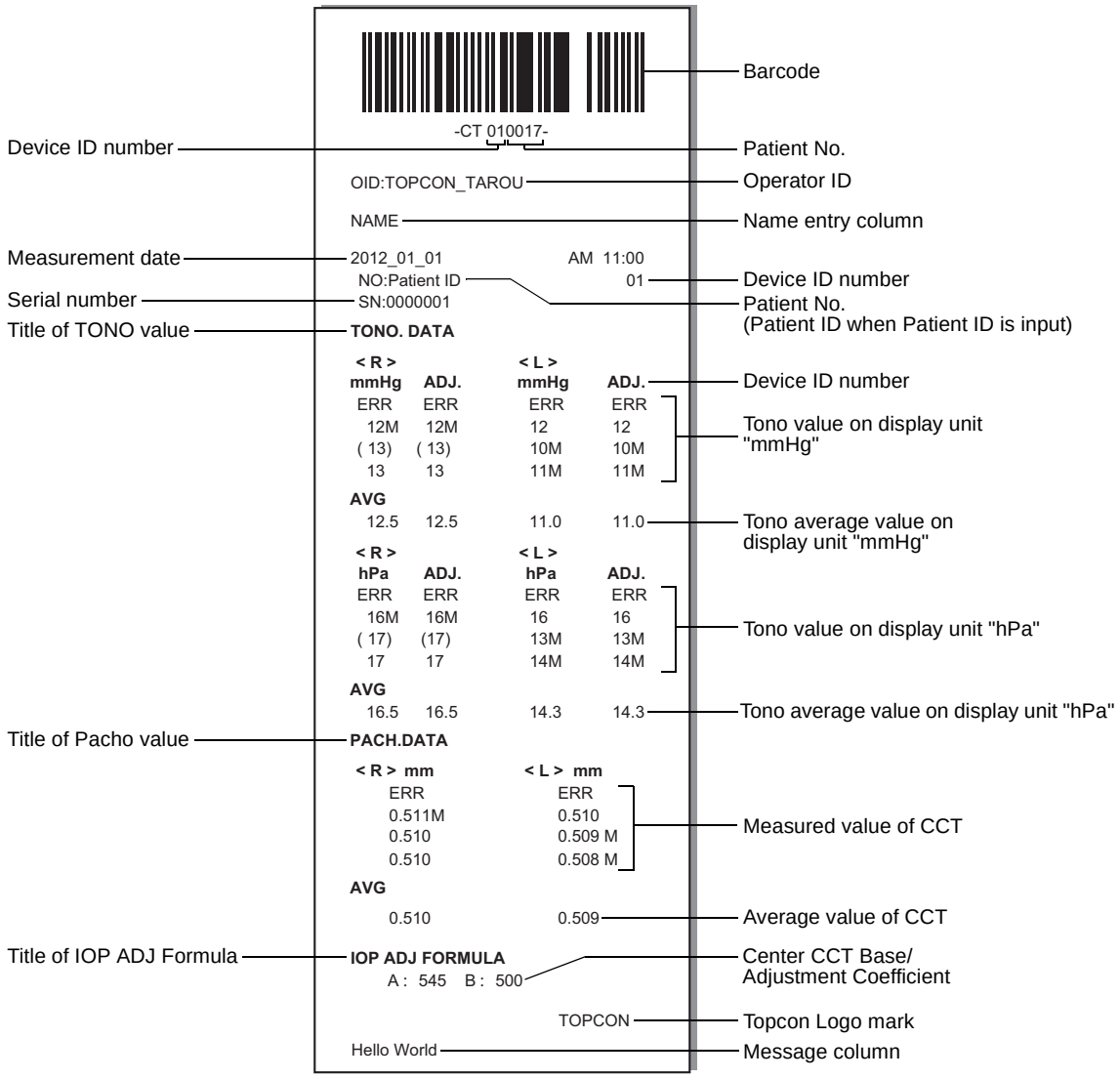


CT-1

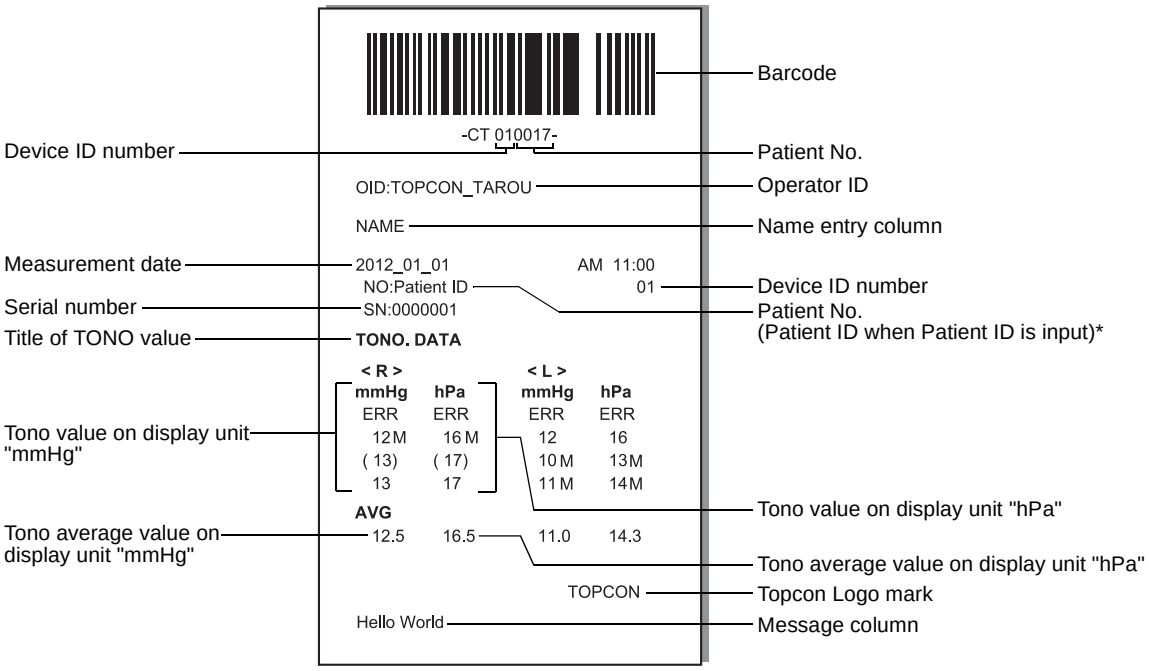

Barcode
-CT 010017-
Device ID number
Patient No.
OID:TOPCON_TAROU
Operator ID
NAME
Name entry column
Measurement date
2012_01_01
AM 11:00
NO:Patient ID
01
Device ID number
Serial number
SN:0000001
Patient No.
(Patient ID when Patient ID is input)*
Title of TONO value
TONO. DATA
< R >
mmHg
ERR
12M
(13)
13
hPa
ERR
16M
(17)
17
Tono value on display unit "mmHg"
Tono value on display unit "hPa"
AVG
12.5
16.5
Tono average value on display unit "mmHg"
Tono average value on display unit "hPa"
< L >
mmHg
ERR
12M
(13)
13
hPa
ERR
16M
(17)
17
AVG
12.5
16.5
TOPCON
Topcon Logo mark
Hello World
Message column

Printed example when "Printer order" of "Print" is set to "DATA"

CT-1P

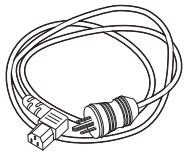
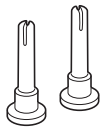
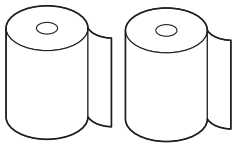
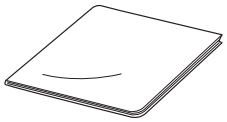
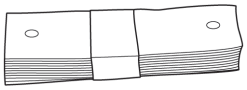
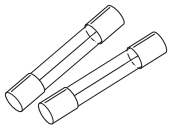
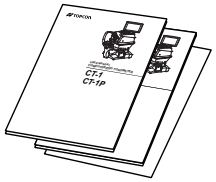
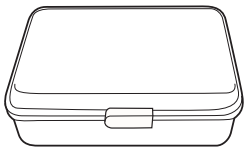
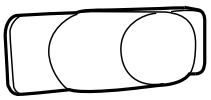
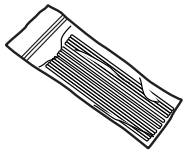
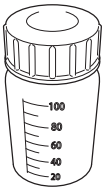


CT-1


Barcode
-CT 010017-
Device ID number
Patient No.
OID:TOPCON_TAROU
Operator ID
NAME
Name entry column
Measurement date
2012_01_01
AM 11:00
NO:Patient ID
01
Device ID number
Serial number
SN:0000001
Patient No.
(Patient ID when Patient ID is input)*
Title of TONO value
TONO. DATA
< R >
< L >
mmHg
hPa
mmHg
hPa
ERR
ERR
ERR
ERR
12M
16M
12
16
(13)
(17)
10M
13M
13
17
11M
14M
Tono value on display unit "mmHg"
Tono value on display unit "hPa"
AVG
Tono average value on display unit "mmHg"
12.5
16.5
11.0
14.3
Tono average value on display unit "hPa"
TOPCON
Topcon Logo mark
Hello World
Message column

STANDARD ACCESSORIES

The following are standard accessories. Make sure that all these items are included (the quantity is indicated in parenthesis).

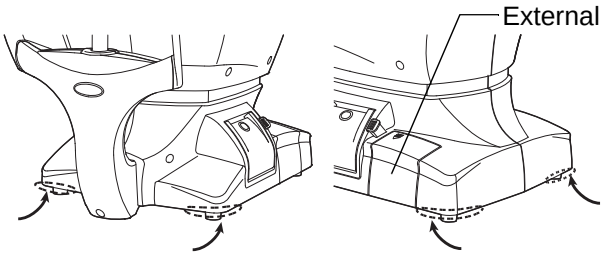
Power cable (1) 	Chinrest pin (2) 
Printer paper (2) 	Monitor cleaner (1) 
Chinrest tissue (1) 	Dust cover (1)
Fuse (2) 	User Manual, Instruction Manual, Unpacking and Assembling, Cleaning Procedure (1 each) 
Accessory case (1) 	Measuring window cap (1) 
Applicator (1) 	Blower (1)
Plastic container (1) 	

PREPARATIONS

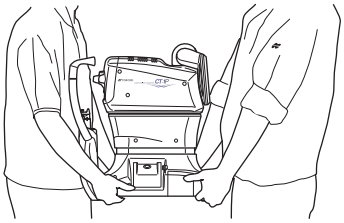
INSTALLATION

CAUTIONS	• The instrument should be moved by two people holding the bottom of the device. Be sure to hold the bottom with two persons. To avoid injury, be aware of projections at the bottom. Carrying by one person may cause harm to his/her back or injury by falling parts. Also, holding areas other than the bottom and holding the External I/O terminal cover may cause injury, as well as damage to the instrument. • To prevent damage and injuries, do not install the instrument on an uneven, unsteady or sloped surface. • When setting an instrument on an instrument table, pay attention not to catch the patient's fingers between the instrument and the table.

1 Firmly hold the instrument at the position shown below and place it on the automatic instrument table.
For the adjustable instrument table, see “OPTIONAL ACCESSORIES” on page 122.



Holding positions


Holding the instrument

CONNECTING POWER CABLE

WARNINGS	Be sure to connect the power plug to an AC 3-pin receptacle equipped with grounding. Connection to a receptacle without grounding may cause fire and electric shock in case of short-circuiting.

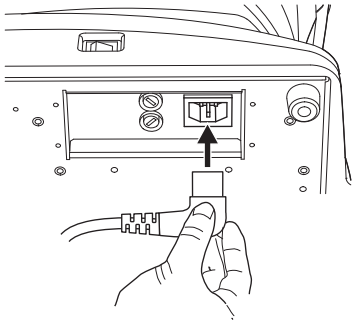
CAUTIONS	To avoid electric shock, do not handle the power plug with wet fingers.

1 Make sure the POWER switch of the instrument is OFF.

2 Tilt the body slowly so that the POWER switch is on top and the power inlet at the bottom can be seen.

3 Connect the power cable to the Power inlet.

4 Insert the power cable plug into the 3-pin AC grounding receptacle.



CONNECTING EXTERNAL I/O TERMINALS

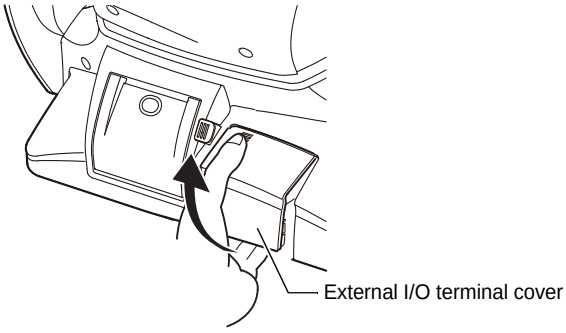
CAUTIONS	To avoid electric shock, do not touch the external connection terminal and the patient at the same time.

NOTES	When connecting this product with a commercial personal computer, use one conforming to IEC60950/IEC60950-1, with a separation unit.

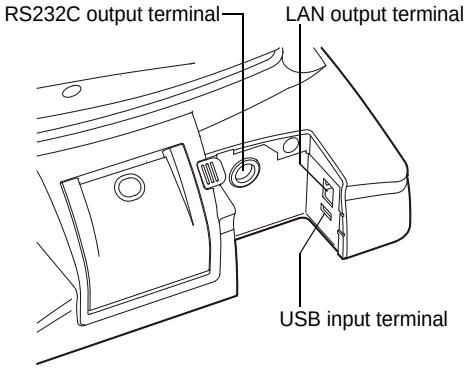
DATA OUTPUT

This product can be connected to a personal computer (PC) and other external devices via the RS232C or LAN.

1 Remove the External I/O terminal cover by pulling up as follows.



2 Connect the connection cable to the output terminal of the instrument.



3 Connect the other end of the connection cable to the PC, etc.

4 Replace the External I/O terminal cover.

DATA INPUT

This product can be connected to a bar-code reader and other external devices via USB.

1 Connect the connection cable to the input terminal of the instrument.

2 Connect the other end of the connection cable to the external device.

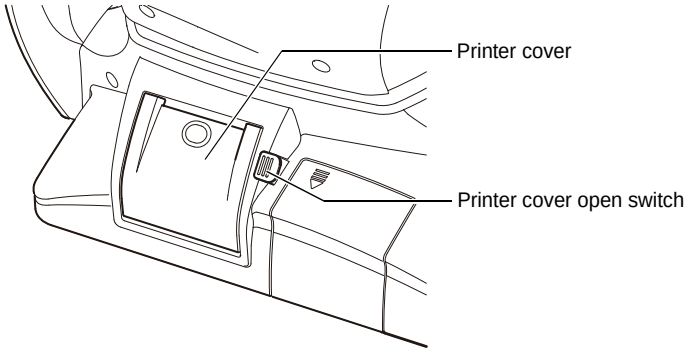
NOTES	For questions about connections, contact your TOPCON dealer.

PRINTER PAPER SETTING

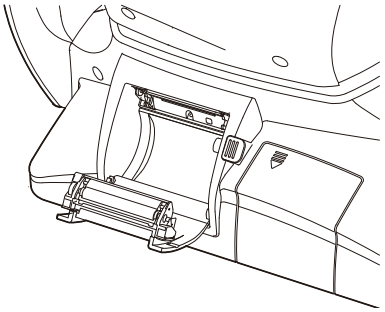
CAUTIONS	• To avoid failure or potential injury, do not open the printer cover while the printer is in operation. • To avoid potential injury in case of malfunction, including a paper jam, be sure to shut off the power before attempting to repair it. • To avoid potential injury, do not touch the printer body including metal parts or the paper cutter, while the printer is in operation or when replacing the printer paper.

NOTES	If you insert the printer paper backwards, nothing is printed.

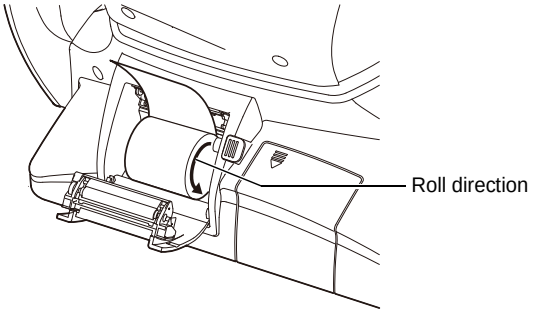
1 Press the printer cover open switch to open the printer cover.



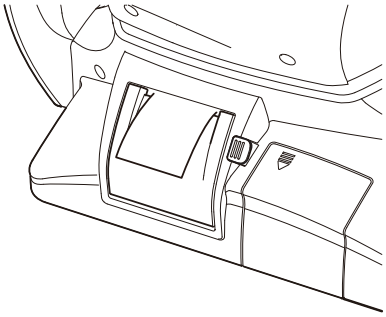
2 Open the printer cover to the limit.



3 Insert the printer paper in the direction shown below and pull out the paper end to your side by 7 to 8cm.



4 Bring the paper into the center, then close the printer cover.



.

NOTES	• In case the printer cover is not firmly closed, printing will not start, and "Close printer cover." will be displayed on the monitor screen. • A 58mm wide paper roll (example: TP-50KJ-R [Nippon Paper Co.]) is recommended. Other paper rolls may cause an abnormal printing noise or an unclear print.

RECOVERY FROM POWER SAVE STATUS

This instrument adopts the power save system for saving electric power. When the machine is not operated for a set time, the control panel becomes a screensaver.

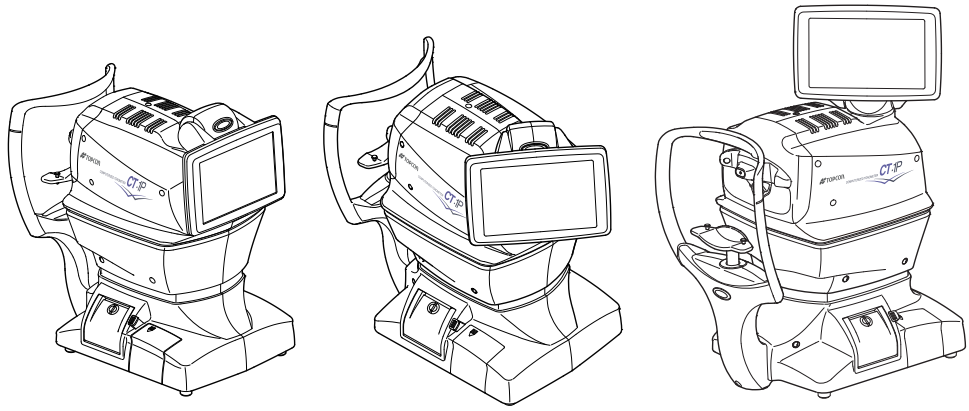
1 Tap the control panel.

In a few seconds, the measurement screen is displayed and measurement is enabled.

NOTES	The time to start the power save status can be changed in the initial setting "SETTING THE AUTO POWER SAVE" (see page 75).

ADJUSTING THE CONTROL PANEL POSITION

The control panel may be positioned by swinging and tilting the monitor to your desired position. Touching the control panel controls operations including chinrest movements, alignment and measurement.



NOTES	• The layout of [R] button/[L] button is reversed according to the position of the control panel. • The moving direction by tapping is changed according to the position of the control panel. • Regardless of the position on the control panel, it moves toward the direction of the panel part tapped continuously.

BASIC OPERATIONS

PREPARATION BEFORE MEASUREMENT

NOTES	Do not put the patient's face on the chinrest until the power is on.

TURNING ON THE INSTRUMENT

1. Make sure the power cable is connected properly.
   For the details of the connection, refer to “CONNECTING POWER CABLE” on page 28.
2. Turn on the POWER SWITCH.
3. The title screen and measurement screen are displayed and the confirmation message of setting of safety stopper is displayed in a few seconds.

4. Tap either the YES button or NO button, return to the Measurement screen.

NOTES	• Refer to 37 Page for SETTING THE SAFETY STOPPER. • If "YES" is tapped, the confirmation message of setting of safety stopper is displayed upon power ON from next time. • If "NO" is tapped, the confirmation message of setting of safety stopper is not displayed upon power ON from next time.

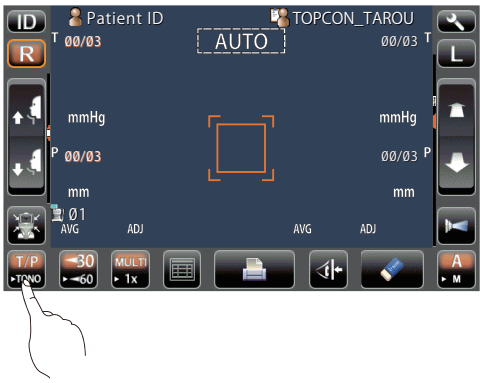
SELECTING THE MEASUREMENT MODE

On this product, measurement mode can be changed between TONO (TONO measurement) and T/P (TONO/PACHO continuous measurement).

1 Confirm the Measurement screen.

2 Tap the [MEASUREMENT MODE] button on the control panel and select a measurement mode. Indication of the [MEASUREMENT MODE] button is changed.

TONO: TONO measurement
T/P: TONO/ PACHO continuous measurement

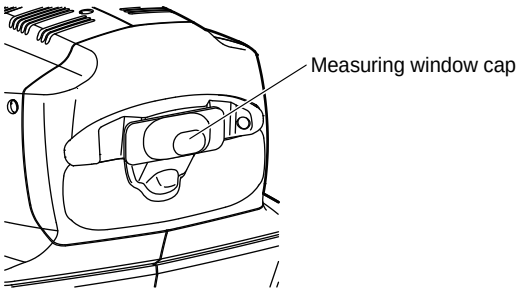


NOTES	Only in CT-1P.

CHECKING THE MEASURING NOZZLE

CAUTIONS	Before measuring, check if there is any foreign matter on and around the measuring nozzle. If there is any, it may enter and damage the patient's eye during the measurement.

1 Remove the measuring window cap.

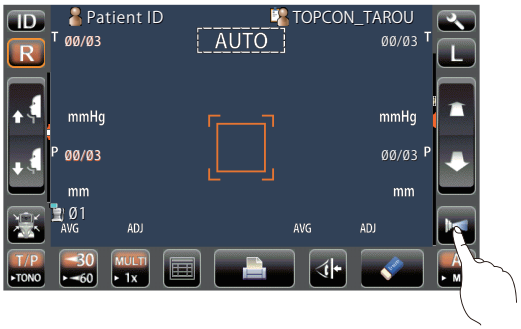


2 Check if there is any foreign matter on and around the measuring nozzle. If there is any, turn OFF the [POWER] SWITCH, clean it off and then turn ON the [POWER] SWITCH.
For cleaning, see "CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE" on page 102.

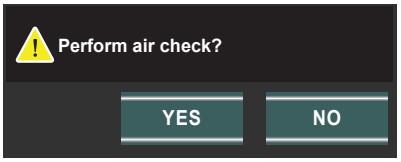
AIR CHECK

This instrument is equipped with a function for checking correct operations of the measurement system inside the instrument.

1 On the AUTO mode measurement screen, tap the [Air Check] button.

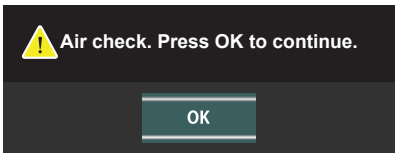


2 Then, the confirming message is displayed.

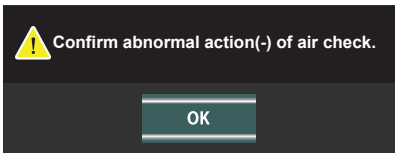


3 Press the [YES] button. Then, air is blown out from the measuring nozzle automatically.

4 Make sure the message box of "Air check. Press OK to continue." is displayed on the control panel.



5 Press the [OK] button, return to Measurement screen.

NOTES	If abnormal action(+) or abnormal action(-) is displayed, the condition is not normal. Check if there is any object before the measuring nozzle. If there is any, remove it, press the [OK] button and do the check again. If there is no object, a failure is suspected. Turn the [POWER] switch to OFF, unplug the power cable, and call your dealer or TOPCON at the address printed on the back cover of this manual. 

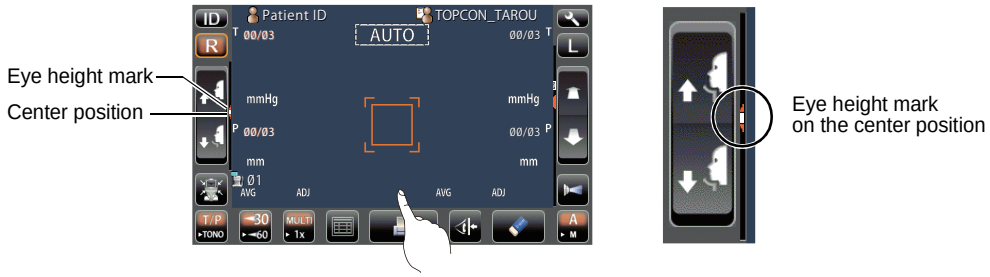
CAUTIONS	• To avoid electric shock, do not touch the external connection terminal and the patient at the same time. • To avoid injury when moving the UP/DOWN button for chinrest, be careful not to catch the patient's fingers. Tell this to the patient, too. • To avoid injury when operating the machine, be careful about the cover not to catch the fingers of the patient. Tell this to the patient, too.

NOTES	• Adjust the height of the adjustable instrument table so that the patient can sit on the chair comfortably. Otherwise, correct measurement values may not be obtained. • Before starting measurement, explain the functioning so patients are not surprised by the air puff. • When operating the instrument, be careful that the instrument does not touch the patient's nose. If touched, clean the instrument following "CLEANING THE MEASURING WINDOW GLASS" on page 101. • If no patient ID is registered, a "patient No." is assigned automatically in order of examination.

1 Check the measurement screen.

2 Make sure that the eye height mark is at the center position as explained below.

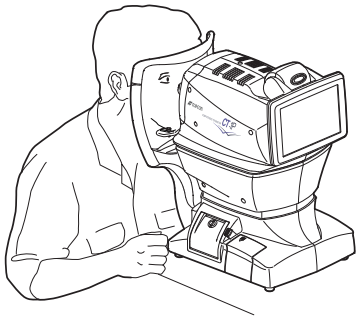
If the eye height mark is above the center position, press the lower side of the control panel display, or if it is below the center position, press the upper side of the control panel display, so as to move the eye height mark to the center position.



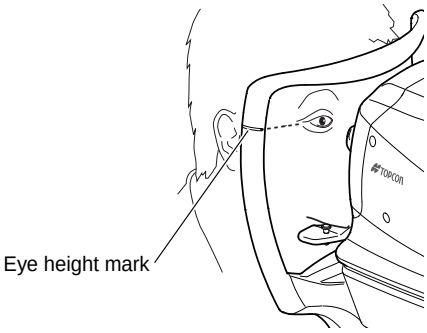
3 Have the patient sit in front of the instrument.

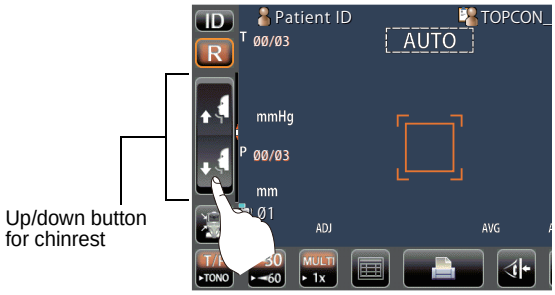
4 Adjust the adjustable instrument table or the chair height for the patient to put his/her chin on the chinrest comfortably.

5 Place the patient's chin on the chinrest and check that his/her forehead is touching to the forehead rest.



6 Press the UP/DOWN button to adjust the chinrest height until the eye height mark of the chinrest reaches the same height as the patient's eye.



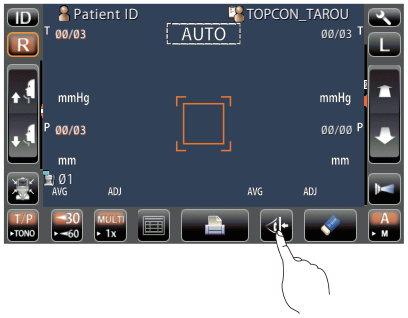


SETTING THE SAFETY STOPPER

CAUTIONS	• Before measuring, set the safety stop to prevent the measuring window glass from hitting the patient's eye. Set it respectively for the right and left eyes. • Set the safety stop from the side of the instrument. Setting operations from other positions, where checking of the eye position is not easy, may cause injury.

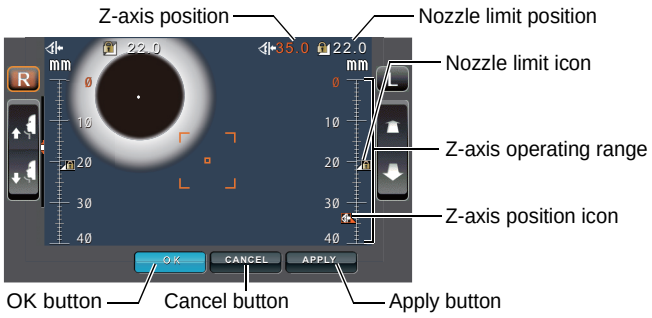
1 Select the right/left eye by tapping the R button/L button.

2 Tap the Safety Stopper button on the control panel.

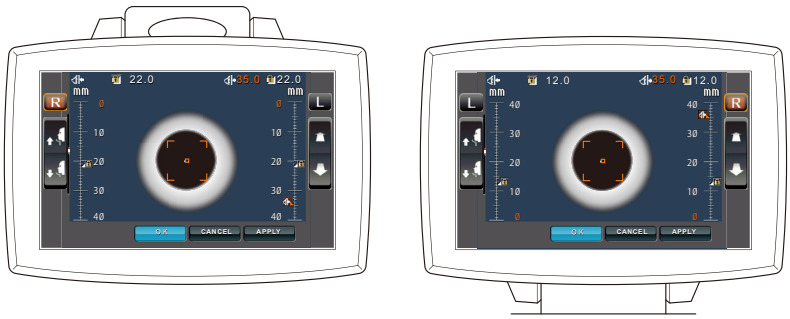


NOTES	Set the nozzle limit individually for the right/left eye. If measurement is performed by setting the safety stopper only for one eye, or without setting the safety stopper at all, the measurement window glass might hit the patient's eye.

3 When the Safety Stopper button is tapped, the Safety Stopper screen is called up.

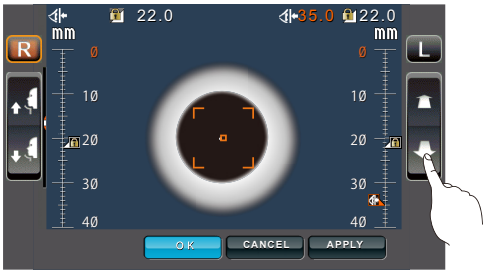


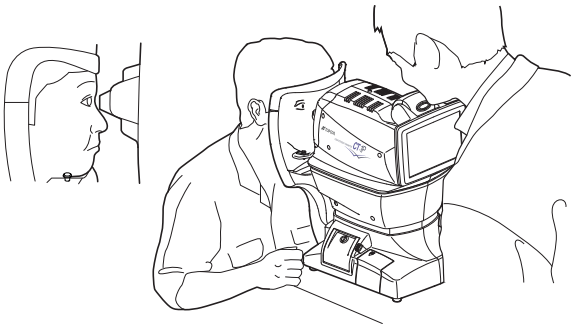
NOTES	By the position of a control panel, arrangement of the R button/ L button, Z-axis position, nozzle limit position, Z-axis operating range, nozzle limit icon, and Z-axis position icon is reversed.



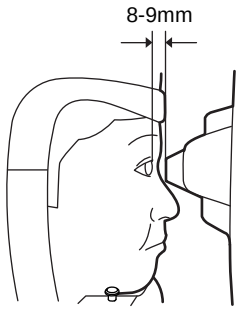
4 Operating the control panel, set the center of the measurement screen nozzle to the cornea center of the patient.

5 By tapping the Measuring Head Forward/Backward button, adjust the position of the z-axis position icon for the right/left eyes.



NOTES	At this moment, confirm alternately the distance between the patient's eye and the measuring nozzle and the safety stopper screen, and adjust the position of the z-axis position icon. 

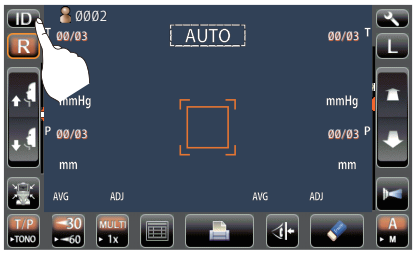
6 At a position where the measuring nozzle is 8-9mm from the cornea, tap the [OK] button and thereby set the position of the nozzle limit.



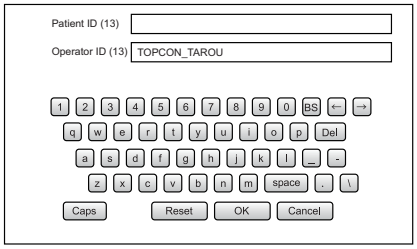
7 Return to the Measurement screen and confirm that the position of the nozzle limit icon is changed, push the main unit a little forward by operating the [Measuring Head Forward/ Backward] button of the control panel, and then confirm that a message "TOO CLOSE" is displayed on the screen. Setting is complete if the main unit does not go forward any more.

SETTING THE PATIENT ID

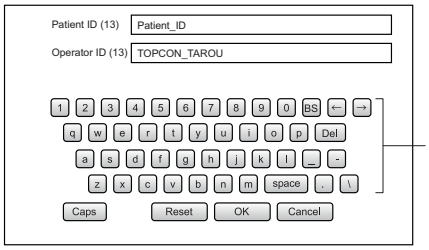
1 Tap the [ID] button on the control panel.



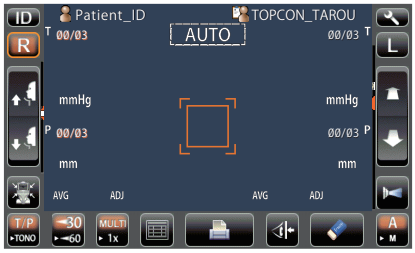
2 The Patient ID Input screen is called up.



3 Enter the patient ID using the keyboard on the screen.



4 Return to the Measurement screen, and confirm that the patient ID is updated.



NOTES	If the patient ID is set to "OFF" in the initial setting, the patient No./ patient ID is not displayed on the measurement screen.

AUTO MODE MEASUREMENT

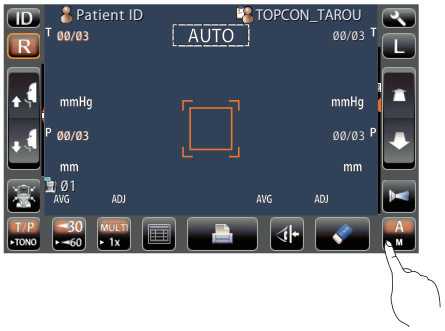
NOTES	• Auto measurement mode may not be possible, in cases where the eyelid and the eyelashes cover the pupil. If this occurs, the operator should tell the patient to open their eyes as wide as possible, or lift the eyelid to allow for measurement. • Auto measurement mode may not be possible due to frequent blinks or existing abnormalities in the corneal surface caused by corneal disease etc. In this case, select manual mode. • The ocular pressure varies due to heart beats and tears. So, if it is not possible to obtain exact measurement values by measuring only once or twice, it is recommended to perform ocular pressure measurements several times. • When operating the instrument, be careful that the instrument does not touch the patient's nose. If touched, clean the instrument as specified in "CLEANING THE INSTRUMENT" on page 101. • If the patient is wearing make up on the eyelid or around the eyelid using glitter, the auto alignment may not function properly. In this case, select manual mode. • If the machine is moved before the measurement values are displayed, it might cause an incorrect measurement.

SETTING THE AUTO MODE

Before shipment the default setting is "AUTO".

1 Check that the MEASUREMENT screen is on. If the AUTO/MANUAL button is "A," the mode is Auto mode.

2 If "M" (Manual mode) is displayed, tap it and change to the Auto mode.

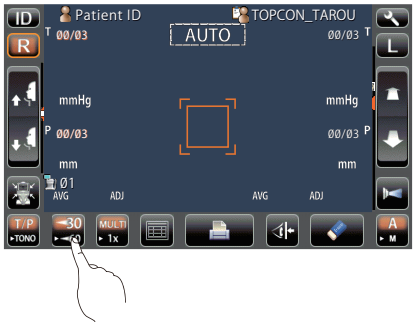


SETTING THE MEASURING RANGE

In this instrument, the measuring range can be switched in 2 steps between "1-30" and "1-60." Normally, "1-30" is used, but if the patient's ocular pressure is high, switch it to "1-60." The default setting is "1-30" upon power on.

1 Check the measurement screen.

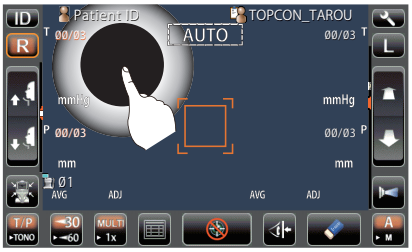
2 Tap the 30/60 button of the control panel and set the measuring range.

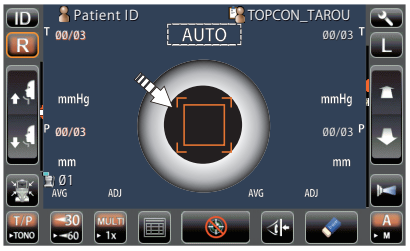


ALIGNMENT AND MEASUREMENT

Alignment can be operated from the control panel.

1 When the pupil is displayed, tap the display around the pupil. The measuring head moves to display the pupil image and alignment dot on the center of the screen.





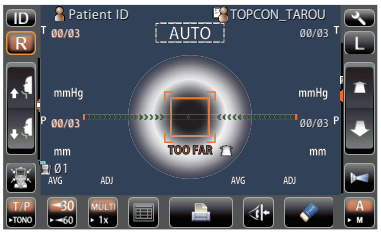
NOTES

When the measuring head has reached the limit of movement (vertical/lateral directions), a yellow-colored limit mark appears, showing it is the movement limit in that direction. Tap the display, move the measuring head to a position until the pupil image comes to the center.

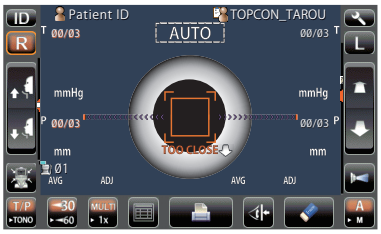
Limit mark

NOTES

When the measuring head is at the limit of movement in the forward direction, "TOO CLOSE" is displayed and the buzzer sounds, and when it is at the limit of movement in the backward direction, "TOO FAR" is displayed. Using the [Measuring Head Forward/Backward] button, move the measuring head to a position until the pupil image comes to the center.

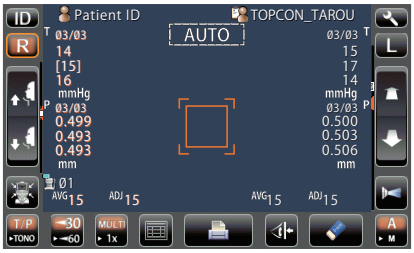


Limit of movement in the backward direction



Limit of movement in the forward direction

2 Alignment starts automatically, and measurement is performed. The measurement result is displayed.



NOTES	• When the "Full Auto" of "R/L move mode" is selected in the initial setting, the instrument measuring head moves automatically to the other eye side for measuring. If the patient closes or blinks their eyes at the time of the right-and-left eye change, the change may be unable to be performed correctly. If the "Manual" of "R/L move mode" is selected, press the [R] button or [L] button of the other eye side. If the "Auto(RL)" of "R/L move mode" is selected, the measuring head moves automatically to the other eye side, however a measurement is not performed. • Auto print (available only under Auto mode) When the auto print setting is "ON" in the initial setting, measurement results are printed out automatically after measuring the right and left eyes. (See page 69.) • When "Please touch pupil on the screen." is displayed, please confirm if the patient's eye fits normal conditions for measuring. Then tap the pupil on the control panel again. • If measurement values were not obtained for the set measurement count due to measurement errors, an additional measurement is performed. For the additional measurement, see page 77. • When the alignment status has continued for more than 30 seconds, "Please touch pupil on the screen." is displayed, then the mode is changed automatically to the Manual measurement mode. • To stop alignment in the middle, tap the [Alignment stop] button. It is possible to stop alignment also by tapping the control panel anywhere, while an [Alignment stop] button is displayed.

DISPLAYING MEASUREMENT VALUES

With regard to measurement values, for both TONO and PACHO(only in CT-1P), the data of the latest three measurements are displayed on the control panel.

Figures only:	Measurement was done correctly.
[ ] figures:	When the reliability of measurement is low.(only TONO)
ERROR:	Measurement was not done correctly.
OVER:	When the measurement range is exceeded.(only TONO)

NOTES	• In TONO average value display, low-reliability numerical data with [ ] are not added to the average value calculation. However, if all measurement data are numerical data with [ ], the average value calculation is done using these data. • For explanation of the messages on the control panel screen, refer to “MESSAGE LIST” on page 109.

When the auto print setting is "OFF" in the initial setting, print out measurement results by tapping the [PRINT OUT] button, as necessary.

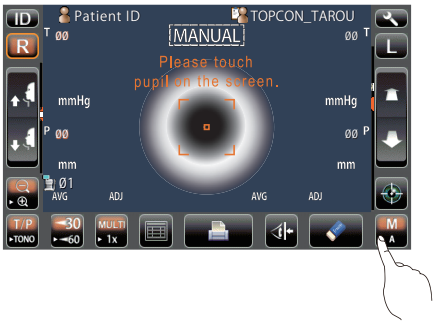
MANUAL MEASUREMENT MODE

NOTES	• Adjust the height of the instrument table so that the patient can sit comfortably. Otherwise, correct measurement values may not be obtained. • Do not perform measurement if the patient stops breathing or is nervous. Otherwise, correct measurement values may not be obtained. • If the machine is moved before measurement values are displayed, it may cause incorrect measurement results.

SETTING THE MANUAL MODE

1 Check that the MEASUREMENT screen is on. If the AUTO/MANUAL button is "M," the mode is Manual mode.

2 If "A" (Auto mode) is displayed, tap it and change to "M".

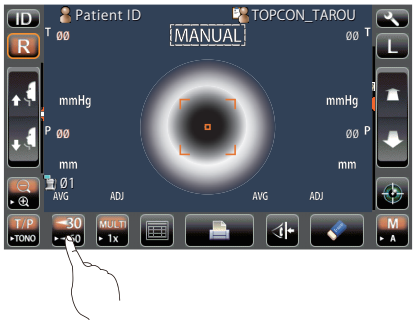


SETTING THE MEASURING RANGE

In this instrument, the measuring range can be switched in 2 steps between "1-30" and "1-60." Normally, "1-30" is used, but if the patient's ocular pressure is high, switch it to "1-60." The default setting is "1-30" upon power on.

1 Check the measurement screen.

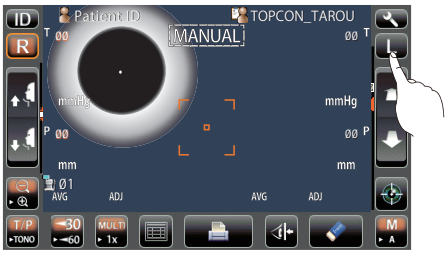
2 Tap the 30/60 button of the control panel and set the measuring range.



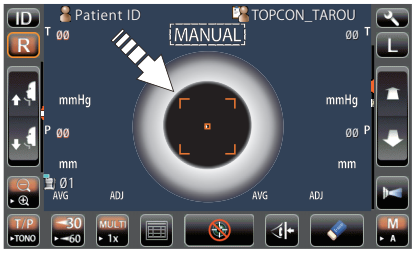
ALIGNMENT AND MEASUREMENT

Alignment is operated on the control panel.

1 Select the right/left eye by tapping the R button/L button.

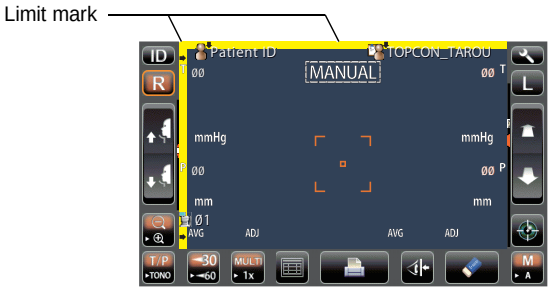


2 When the pupil is displayed, tap the display around the pupil. For adjusting Z direction distance, the measuring head moves to display the pupil image and alignment dot on the center of the screen.

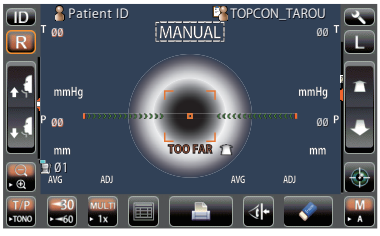


NOTES

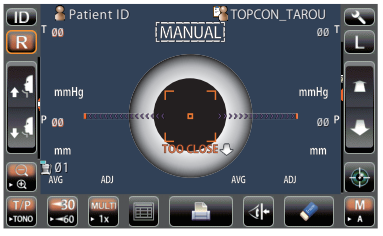
- Depending on the alignment condition, the alignment mark is displayed differently:
  - ⬚ : When alignment is insufficient/out of the measuring range
  - □ : When alignment is within the measuring range in all directions (front/rear, right/left, top/bottom)
- If the pupil is not displayed on the control panel, move the measuring head by pressing the control panel, checking the eye height mark on the measurement window as a guide (see page 36).
- When the measuring head has reached the limit of movement (vertical/lateral directions), a yellow-colored limit mark appears, showing it is the movement limit in that direction. Tap the display, move the measuring head to a position until the pupil image comes to the center.



- When the measuring head is at the limit of movement in the forward direction, "TOO CLOSE" is displayed and the buzzer sounds, and when it is at the limit of movement in the backward direction, "TOO FAR" is displayed. Using the Measuring Head Forward/Backward button, move the measuring head to a position until the pupil image comes to the center.

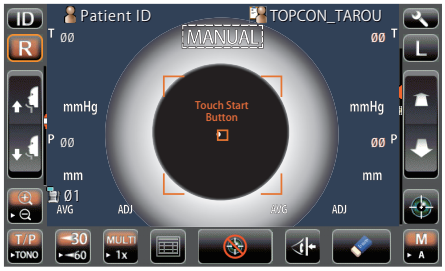


Limit of movement in the backward direction

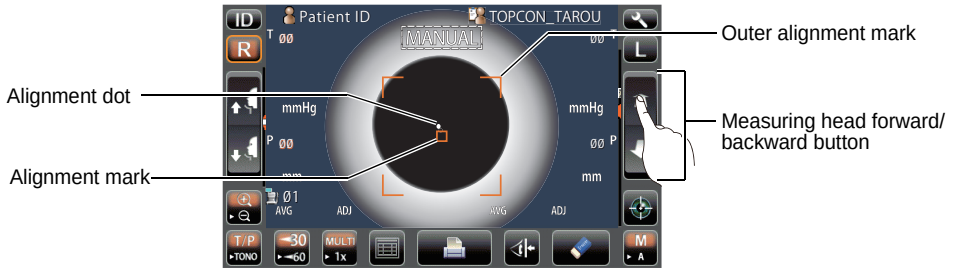


Limit of movement in the forward direction

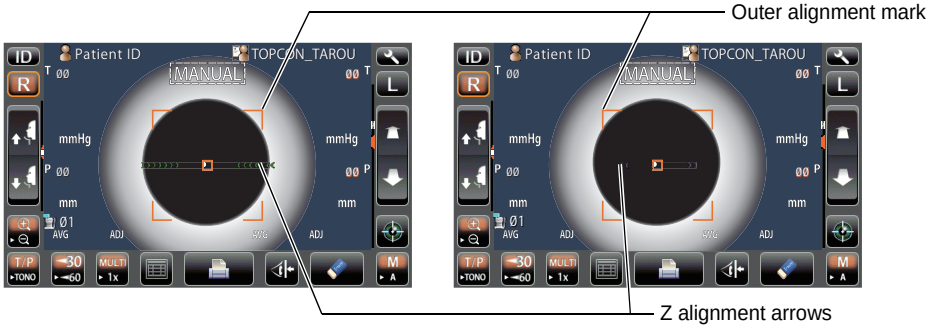
3 When the measuring head moves, the displayed patient eye is enlarged.



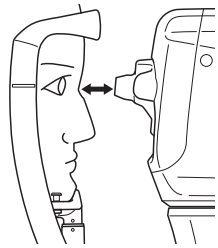
4 Tap the Measuring Head Forward/Backward button and focus on the patient's eye. The alignment dot is reflected off-focus on the cornea.

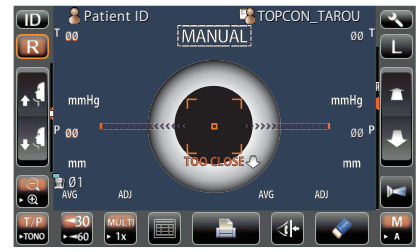


5 When the main body is brought closer to the patient's eye, Z alignment arrows appear on the control panel screen.

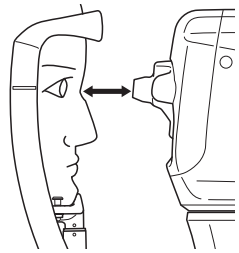


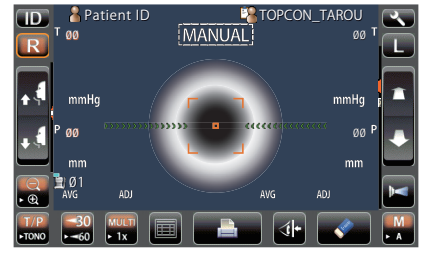
NOTES	• Do not allow the eyelash and eyelid to cover the outer alignment mark to ensure stable measurement. • If the machine is too close to the patient's eye in comparison with the optimal alignment position, outward magenta-colored Z alignment arrows blink with a message "TOO CLOSE," or if it is too far the arrows are changed to inward lime green color, and if the machine is completely off the alignment range, the message "TOO FAR" is displayed." The number of arrows are reduced accordingly as the optimal alignment reference position comes closer. If the alignment reaches the measuring range, the arrow is displayed in aqua color.



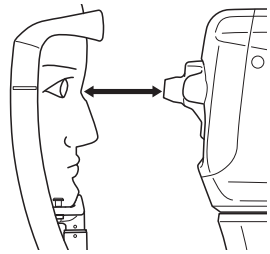


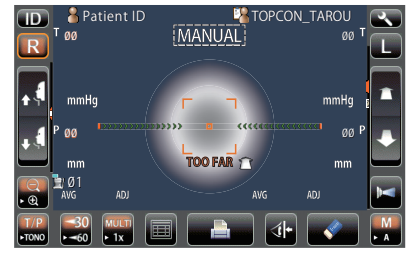
Too close





Far

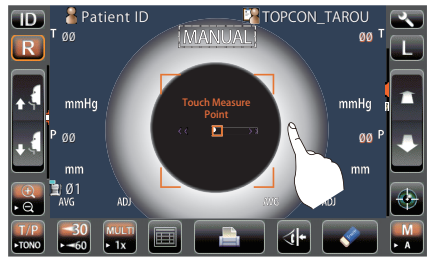




Off the alignment range

6 Measurement starts by tapping the START button. When Touch Measure is ON, and when the patient eye enlargement is displayed, measurement starts only by tapping the screen. For the Touch measurement setting, see page 75.

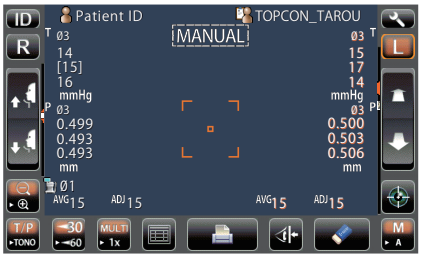
Touch Measure is "ON"



Touch Measure is "OFF"

NOTES	• Even if fine alignment has not been achieved, measurement can be performed by tapping the START button. To ensure correct measurement, try to get fine alignment. • Only when the outer alignment mark is displayed, measurement can be done by pressing the START button or by tapping the screen. • When rotating the control panel to operate it at the upper part of the product, do not press the START button too hard, so as not to lose the alignment. • To stop alignment in the middle, tap the Alignment stop button. It is possible to stop alignment also by tapping the control panel anywhere, while an Alignment stop button is displayed.

7 Measurement is performed and measurement values are displayed on the control panel.



DISPLAYING MEASUREMENT VALUES

With regard to measurement values, for both TONO and PACHO(only in CT-1P), data of the latest three measurements are displayed on the control panel.

Figures only: Measurement was done correctly.
[ ] figures: When the reliability of measurement is low.(only TONO)
ERROR: Measurement was not done correctly.
OVER: When the measurement range is exceeded.(only TONO)

NOTES	• In TONO average value display, low-reliability numerical data with [ ] are not added to average value calculation. However, if all measurement data are numerical data with [ ], average value calculation is done using these data. • In the data printout, manual measurement values will have M marks beside them. • For explanation of the messages on the control panel screen, refer to “MESSAGE LIST” on page 109.

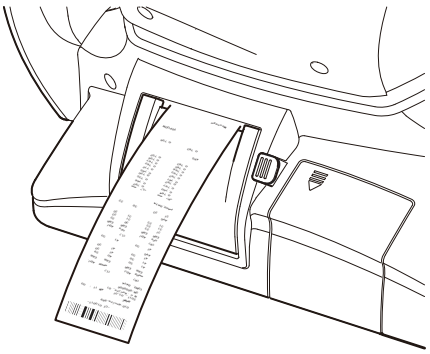
PRINTOUT OF MEASUREMENT VALUES

NOTES	• To avoid a paper jam in the printer, do not feed the paper if it is partly cut or wrinkled. • To avoid discoloring of the printer paper (particularly the recording area) during storage, use a polypropylene bag and not one containing plasticizer (PVC, etc.). • To avoid discoloring of the printer paper (particularly the recording area) after pasting, use water-soluble glue and not one containing solvent. • Since the printer paper is thermosensitive, it is not suitable for keeping records for a long period. If necessary, prepare copies separately.

This instrument can print out measurement values with a printer.

1 Check that the Measurement screen is on.

2 Tap the PRINT OUT button on the control panel.
Measurement values on the monitor are printed out.



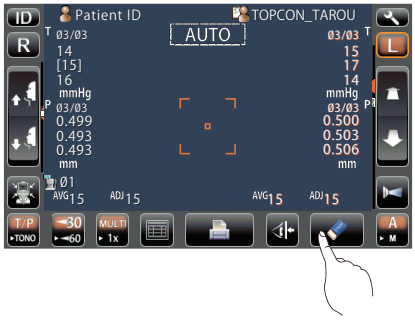
NOTES	• When a red line is printed at the edge of the printer paper, replace it with a new one. For details about the replacement of the printer paper, see “PRINTER PAPER SETTING” on page 30. 58mm wide printer paper (example: TP-50KJ-R, Nippon Paper) is recommended. • "Close printer cover." indicates that the printer cover is left opened, ensure that the printer cover is completely closed. • When the auto print setting is "ON" in the initial setting, measurement is performed under Auto mode, and measurement results are printed out automatically. (See page 69.)

3 The following message of preparing next measurement is displayed.
After printing out, the measurement values on the screen are deleted automatically, return to the Measurement screen by pressing the OK button.

NOTES	• As the OK button is tapped, the measuring head moves to the "stand by mode" position of the initial setting. So, do not place the patient's face on the chinrest. • When the PRINT OUT button is pushed again after all the data is cleared by printing out the measuring data, the previous measuring data is printed out.

CLEARING MEASUREMENT VALUES

1 Tap the ALL CLEAR button on the control panel.
All measurement values of both eyes are cleared.

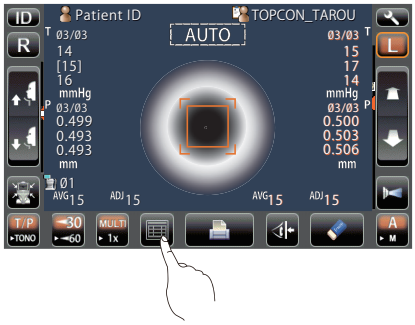


NOTES	After clearing the measurement values, the measuring head moves to the "stand by mode" position of the initial setting. (See page 74.)

DISPLAYING ALL MEASUREMENT DATA

Normally the latest measurement is displayed, but it is possible to display and confirm all measurement data.

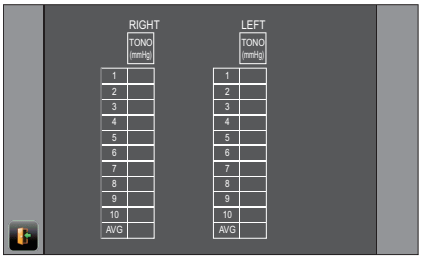
1 Tap the (ALL DATA DISPLAY) button.



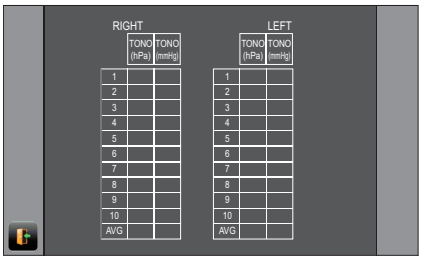
2 The Data Display screen is displayed.

The display unit is varied according to the Settings of setup.

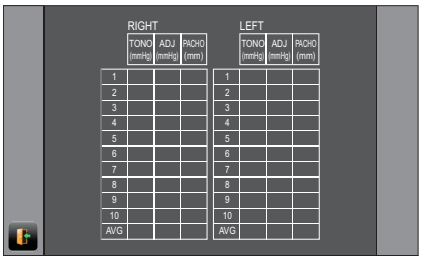
Setup item: TONO display unit in intraocular pressure measurement "mmHg" in TONO measurement mode



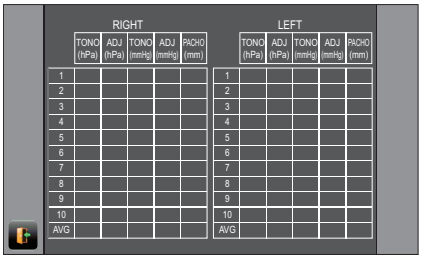
Setup item: TONO display unit in intraocular pressure measurement "hPa" in TONO measurement mode



Setup setting: Display unit in intraocular pressure measurement "mmHg," IOP adjustment "ON," T/P measurement mode(only in CT-1P)

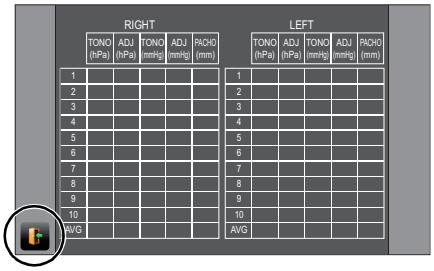


Setup setting: Display unit in intraocular pressure measurement "hPa," intraocular pressure adjustment "ON," T/P measurement mode(only in CT-1P)



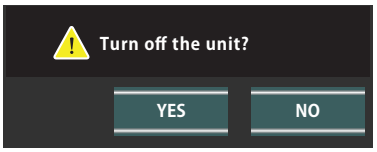
NOTES	For data in manual measurement, the color of a character turns to yellow.

3 To exit the data display and return to the Measurement screen, tap the EXIT button.



OPERATION AFTER USE

1. Tap the (END) button on control panel.
2. The confirmation message of end operation is displayed.



3. Tap the (YES) button. Return the chinrest and measuring head to their initial positions.
4. The message of "Please don't turn the main switch off until the unit stops." is displayed.
5. The operation is complete, then the message of "The unit stops completely. Please turn the main switch." is displayed.
6. Turn the (POWER) switch to off.

NOTES	When external devices are connected to external I/O terminals, turn off the power of these devices too. (if the power switch is provided)

7. Unplug the power cable from a 3-pin AC inlet with grounding.

NOTES	When the instrument is not used for a long period of time, unplug the power supply cable, and detach the cable connected to the external I/O terminal.

OPTIONAL OPERATIONS

DISPLAYING THE PATIENT ID (PATIENT NO.) OR OPERATOR ID

A patient ID or operator ID of up to 13 characters can be inputted and displayed on the control panel and printout.
However, if no patient ID is inputted, the patient No. is allocated automatically by the device.

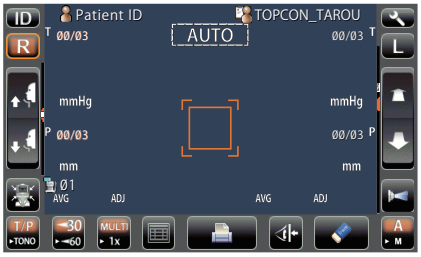
1. Tap the [ID] button.
2. Tap the keyboard on the screen and enter characters. Tap the [OK] button to set the input value.

NOTES	The Patient ID is reset when measurement values are printed or if the [ALL CLEAR] button is tapped. The Patient No. reset condition can be selected so that the patient No. is reset upon power on, in the initial setting of the setup screen. "Refer to "RESETTING THE PATIENT NO." on page 72.

MEASURING ONE EYE ONLY

In Auto mode, it is possible to measure one eye only.

The current measurement position is distinguished by the color of the [R]/[L] button; orange indicates an active measurement position.



MEASURING THE RIGHT EYE ONLY

1. Tap the [R] button to move the measuring head to the right.
2. When the measuring head stops, moving tap the [R] button once again: the lock icon is displayed .

NOTES	When the lock icon is displayed, the measuring head does not move to the other eye even when the measurement of one eye is finished.

3. To release the lock, tap the [R] icon: The lock icon disappears.

MEASURING THE LEFT EYE ONLY

Operation is the same as measuring the right eye.

NOTES	In order to measure the other eye when the lock icon is displayed, tap the other side [R] button or [L] button.

OUTPUT USING RS232C

This instrument can output data to a PC, etc. via the RS232C interface.

1. Connect the interface cable to RS232C OUT.
   Refer to “CONNECTING EXTERNAL I/O TERMINALS” on page 29.
2. Set up of data communication settings.
   For details, refer to “DATA COMMUNICATION (COMM)” on page 66.
3. Perform measurements.
4. Tap the [PRINT OUT] button on the control panel.
   When output is completed, “RS232C SUCCESS” is displayed on the screen.

INPUT USING USB

This instrument can input ID numbers from a bar code reader, etc. via the USB.

1. Check the connection of USB IN.
   For connection, refer to “CONNECTING EXTERNAL I/O TERMINALS” on page 29.
2. Input ID numbers from the external device.
   The inputted ID numbers are displayed on the screen.

OUTPUT USING LAN

This instrument can output data to a PC, etc. via the LAN interface.

1. Connect the network cable to LAN OUT.
   For connection, refer to “CONNECTING EXTERNAL I/O TERMINALS” on page 29.
2. Set up of LAN connection settings.
   For details, refer to “LAN CONNECTION (LAN)” on page 66.
3. Perform measurements.
4. Tap the [PRINT OUT] button on the control panel.

NOTES	For an explanation of messages during communication, refer to the "MESSAGE LIST" on page 109.

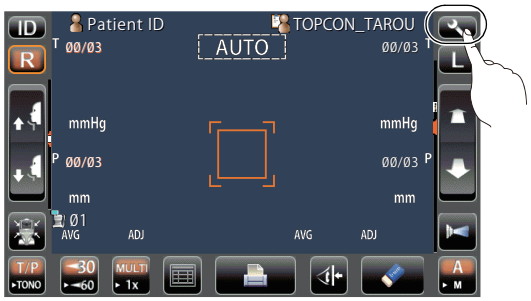
SETTING FUNCTIONS ON THE SETUP SCREEN

OPERATING THE SETUP SCREEN

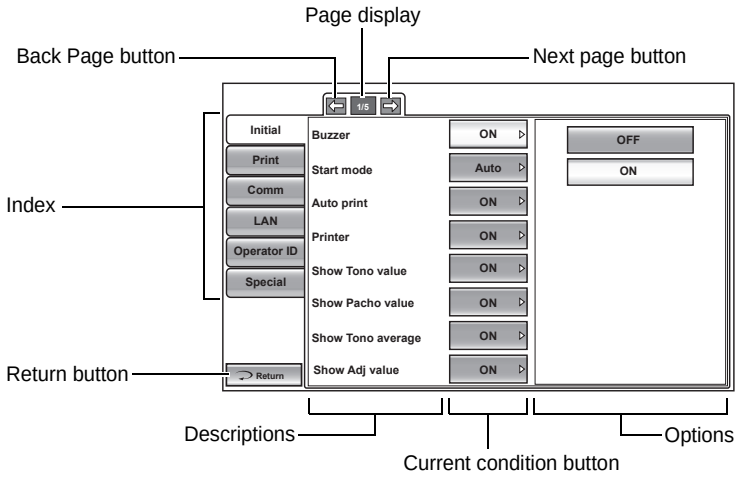
Various functions can be set on the SETUP screen.

PREPARATIONS FOR SETTING

1. Make sure that the power cable is connected.
   For connection, refer to “CONNECTING POWER CABLE” on page 28.
2. Turn ON the [POWER] switch.
3. Tap the [SETTINGS] button on the control panel.

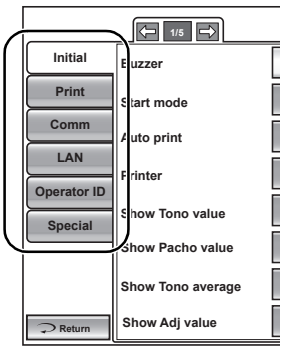


The SETUP screen is displayed.

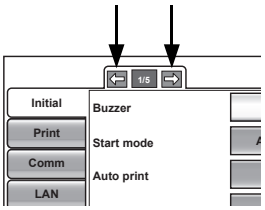


OUTLINE OF SETUP SCREEN OPERATIONS

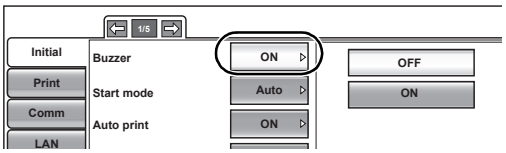
1 Tap [INDEX] and select the category to set.



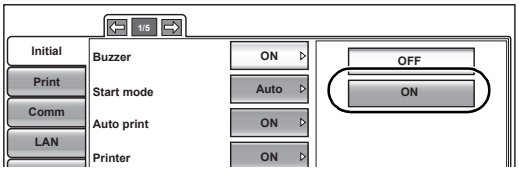
2 Operate the [NEXT PAGE] button or [BACK PAGE] button, as necessary, and display the page to confirm/change.



3 Tap the [Current Condition] button of the item to be changed and find the [Options] button.



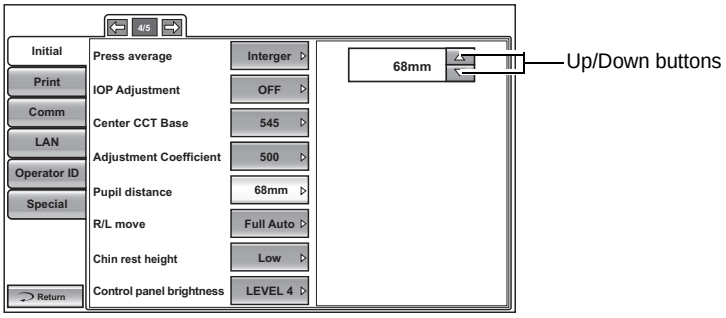
4 Tap the [Options] button and change the setting.



- Instead of the [Options] button, the [UP/DOWN] buttons and ten-key would be displayed.

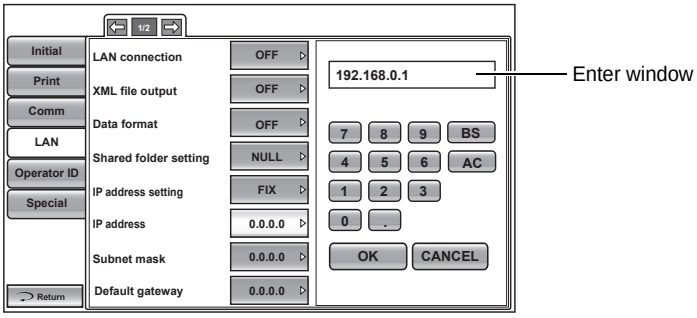
UP/DOWN BUTTON:

Tap the ▲ up or ▼ down button on the screen to change the setting.



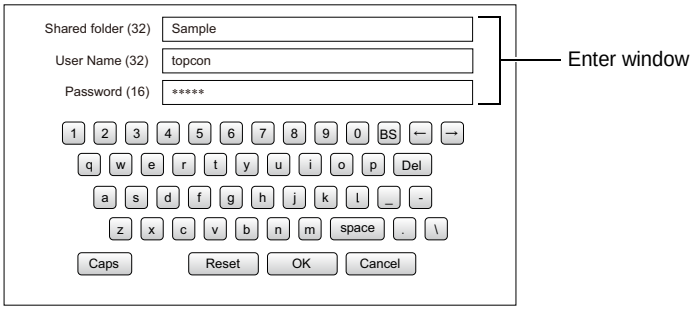
TEN-KEY:

Tap ten-key on the screen and enter the figure. If there are several windows to enter, tap the window to enter the figure by ten-key. Tap OK button to set the input value.



KEYBOARD:

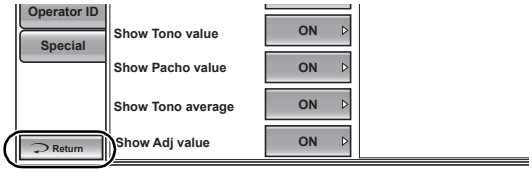
Tap the keyboard on the screen and enter characters. If there are several windows to enter, tap the window to enter the figure by keyboard. Tap OK button to set the input value.


Shared folder (32)
Sample
User Name (32)
topcon
Password (16)
*****
1 2 3 4 5 6 7 8 9 0 BS ← →
q w e r t y u i o p Del
a s d f g h j k l _ -
z x c v b n m space . \
Caps
Reset
OK
Cancel
Enter window

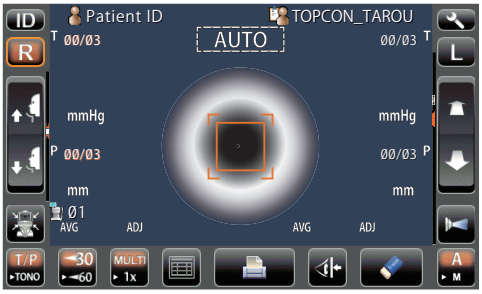
NOTES	The set value is updated when an Options button is tapped.

RETURNING TO THE MEASUREMENT SCREEN

1 Tap the Return button.



2 The Measurement screen is displayed.



LIST OF SETUP ITEMS

Setup items are categorized into 6 large indexes.

"Initial" .....items related to the initial status after power on
"Print" .....items related to output from the internal printer
"Comm" .....items related to data output with the external device
"LAN".....items related to output using the LAN
"Operator ID".....items related to Operator ID.
"Special" .....items related to maintenance (for service engineer only)

INITIAL (INITIAL SETTING)

Initial contains settings related to the initial status after power on, clearing all measurement values, etc.

Descriptions	Options	Details	Initial value	Page
Buzzer	OFF	Buzzer does not sound.	ON	68
	ON	Buzzer sounds.		
Start mode	MANUAL	Default measurement mode is MANUAL.	Auto	69
	AUTO	Default measurement mode is AUTO.		
Auto print	ON	After AUTO measurement, results are printed out automatically.	ON	69
	OFF	Not printed automatically.		
Printer	OFF	Internal printer is disabled.	ON	69
	ON	Internal printer is active.		
Show Tono value	OFF	Tono value is not displayed.	ON	70
	ON	Tono value is displayed.		
Show Pacho value*1	OFF	Pacho value is not displayed.	ON	70
	ON	Pacho value is displayed.		
Show Tono average	OFF	Tono average value is not displayed.	ON	71
	ON	Tono average value is displayed.		
Show Adj value *1	OFF	Adjusted value is not displayed.	ON	71
	ON	Adjusted value is displayed.		
Patient No. reset	OFF	Patient No. is not reset upon power on.	OFF	72
	ON	Patient No. is reset upon power on.		
Show patient ID	OFF	Patient ID is not displayed.	ON	72
	ON	Patient ID is displayed.		
Required patient ID	OFF	Patient ID is not displayed.	OFF	73
	ON	Patient ID is displayed.		
Device ID number	1-99 Set by ten-key display	Sets the Device ID number.	1	73
Show Device ID number	OFF	Patient ID is not displayed.	OFF	74
	ON	Patient ID is displayed.		
Stand by mode	RIGHT	Waiting at the initial position for right eye measurement.	RIGHT	74
	LEFT	Waiting at the initial position for left eye measurement.		
	LAST	Waiting at the last position of the measured eye.		
Auto power save	OFF	Power save function is not used.	10min	75
	1min	Power save status in 1min after last operation.		
	5min	Power save status in 5min after last operation.		
	10min	Power save status in 10min after last operation.		
	20min	Power save status in 20min after last operation.		
	30min	Power save status in 30min after last operation.		
	60min	Power save status in 60min after last operation.		

Descriptions	Options	Details	Initial value	Page
Touch Measure	OFF	Touch measurement is not performed in manual measurement with an enlarged patient eye.	OFF	75
	ON	Touch measurement is performed in manual measurement with an enlarged patient eye.		
Cont. cycle (TONO)	2-10 Set by ten-key display	The number of continuous measurements (TONO)	3	76
Cont. cycle (PACHO) *1	2-10 Set by ten-key display	The number of continuous measurements (PACHO)	3	76
Add Measure	0-99 Set by ten-key display	The number of additional measurements	1	77
Low Credibility Measure	OFF	The value of low reliability is as an error.	ON	77
	ON	The value of low reliability is displayed.		
Date/Time	Set by ten-key display	Sets year, month, day, time (24hrs), minute and second	Installation date/time	78
Init. measure mode *1	TONO	Default measurement mode on is TONO.	T/P	78
	T/P	Default measurement mode is T/P.		
Tono display Unit	mmHg	Display in mmHg	mmHg	79
	digit	Display in digit		
	hPa	Display in hPa		
	Torr	Display in Torr		
Pacho display Unit *1	mm	Display in mm	mm	79
	μm	Display in μm		
Press average Mode	Integer	Display in Integer	Integer	80
	Real	Display in Real		
IOP Adjustment *1	OFF	IOP adjustment type is OFF.	OFF	80
	ON	IOP adjustment type is ON.		
Center CCT Base *1	0-999 Set by ten-key display	Sets the central cornea thickness base value. (Used when IOP adjustment is "ON.") A : Center CCT Base	545	81
Adjustment Coefficient *1	0-999 Set by ten-key display	Sets the adjustment coefficient. (Used when IOP adjustment is "ON.") B : Adjustment Coefficient	500	81
Pupil distance	58mm 60mm 62mm 64mm 66mm 68mm 70mm 72mm 74mm Set by up/down button	Sets the pupil distance between right and left eyes.	68mm *2	82
R/L move	Manual	Measurement head moves right and left manually.	Full Auto	82
	Full Auto	Measurement head moves right and left automatically.		
	Auto(RL)	The switching of right and left eyes is performed at "Auto(RL)".		
Chin rest height	HIGH	Default chinrest height.	Low	83
	CENTER			
	LOW			
Control panel brightness	LEVEL 1 (dark)	The brightness of the control panel.	LEVEL 4	83
	LEVEL 2			
	LEVEL 3			
	LEVEL 4 (bright)			
R/L notation	R/L	Right/left eyes is displayed by R/L.	R/L	84
	OD/OS	Right/left eyes is displayed by OD/OS.		
Packing mode	Execute	Starts packing mode.	Execute	84

Descriptions	Options	Details	Initial value	Page
Shaded characters	ON	Font style of measurement values is shaded.	ON	84
	OFF	Font style of measurement values is not shaded.		

*1:Only in CT-1P

*2:Depending on the destination, preset values differ.

SETTING OF INTERNAL PRINTER (PRINT)

Print contains settings related to output from the internal printer.

Description	Options	Details	Initial value	Page
Barcode	ON	Barcode is printed.	OFF	85
	OFF	Barcode is not printed.		
Operator ID	ON	Operator ID is printed.	OFF	86
	OFF	Operator ID is not printed.		
Name	ON	"Name" space is available.	ON	86
	OFF	"Name" space is not available.		
Date	ON	Date is printed.	ON	86
	OFF	Date is not printed.		
Date style	YMD	Print in Year/Month/Day format.	DMY	87
	MDY	Print in Month/Day/Year format.		
	DMY	Print in Day/Month/Year format.		
Patient No./ Patient ID	ON	Patient No./Patient ID is not printed.	ON	87
	OFF	Patient No./Patient ID is printed.		
Device ID number	ON	Device ID number is printed.	OFF	87
	OFF	Device ID number is not printed.		
Serial number	ON	Serial No. is printed.	ON	88
	OFF	Serial No. is not printed.		
Include error data	ON	"Error" data is printed.	OFF	88
	OFF	"Error" data is not printed.		
TOPCON logo	ON	TOPCON logo is printed.	ON	88
	OFF	TOPCON logo is not printed.		
Message	ON	Message is not printed.	OFF	89
	OFF	Message is not printed.		
Message data	Set by keyboard display	String of up to 72 characters.	NULL	89
Printer order	R/L	TONO measurement value and PACHO measurement value are separately printed.	SIMPLE	89
	DATA	The order is right eye and left eye regardless of the TONO measurement value and PACHO measurement value.		
	SIMPLE	Print in the SIMPLE format.		
Measure correction*1	OFF	Corrected measurement value is not printed.	ON	90
	ON	Corrected measurement value is printed.		
mmHg Display on hPa	OFF	mmHg is not printed on hPa.	ON	90
	ON	mmHg is printed on hPa.		
IOP ADJ*1	OFF	Center CCT Base and Adjustment Coefficient for IOP ADJ formula are not printed.	ON	91
	ON	Center CCT Base and Adjustment Coefficient for IOP ADJ formula are printed.		
Auto Cut	OFF	Auto cut is not carried out.	ON	91
	ON	Auto cut is carried out.		

*1:Only in CT-1P

DATA COMMUNICATION (COMM)

Comm contains settings related to data output with the external device.

Description	Options	Details	Initial value	Page
Output data*1	TONO	Only TONO data are outputted.	TONO	92
	T/P	TONO/Pacho data are outputted.		
Format	MODE1	Average value output format	MODE1	92
	MODE2	Latest value output format		
	STD1	TOPCON STD1 format		
	STD2	TOPCON STD2 format		
	STD5	TOPCON STD5 format		
Output port	OFF	Output port is disabled.	OFF	93
	ON	Output port is enabled.		
Baudrate	2400bps	Baudrate value: 2400bps	9600bps	93
	9600bps	Baudrate value: 9600bps		

*1:Only in CT-1P

LAN CONNECTION (LAN)

LAN contains settings related to data output via LAN.

Description	Options	Details	Initial value	Page
LAN connection	ON	LAN connection is on.	OFF	94
	OFF	LAN connection is off.		
XML file output	ON	XML file is outputted.	ON	94
	OFF	XML file is not outputted.		
Data format	OFF	Data file is not output.	OFF	95
	STD5	TOPCON STD5 format.		
Shared folder setting	Shared folder (up to 32 characters) User name (up to 32 characters) Password (up to 16 characters) Set by keyboard display	Path and permission to the shared folder is set.	NULL	95
IP address setting	FIX	Assign IP address manually.	FIX	95
	AUTO	Assign IP address automatically.		
IP address	0. 0. 0. 0 Set by ten-key display	IP address of PC to output data.	0.0.0.0	96
Subnet mask	0. 0. 0. 0 Set by ten-key display	Subnet mask address of CT-1P/CT-1.	0.0.0.0	96
Default gateway	0. 0. 0. 0 Set by ten-key display	Default gateway address of CT-1P/CT-1.	0.0.0.0	96
Primary DNS server	0. 0. 0. 0 Set by ten-key display	Primary DNS Server number.	0.0.0.0	97
Secondary DNS server	0. 0. 0. 0 Set by ten-key display	Secondary DNS Server number.	0.0.0.0	97

OPERATOR ID

OPERATOR contains settings related to Operator ID.

Description	Options	Details	Initial value	Page
Use Operator ID	ON	Operator ID will be displayed on the control panel and printer output.	OFF	98
	OFF	Operator ID will not be displayed on the control panel and printer output.		
Prefix of Ope. ID	Set by ten-key display (up to 3 characters)	The Prefix of Operator ID can be registered.	NULL	98
Operator ID request	OFF	Operator ID is not required.	OFF	99
	ON	Operator ID is required.		
Fixed Operator ID	OFF	Operator ID is not fixed.	OFF	99
	ON	Operator ID is fixed.		
Input Fixed Ope. ID	Set by ten-key display (up to13 characters)	Input fixed operator ID.	NULL	99

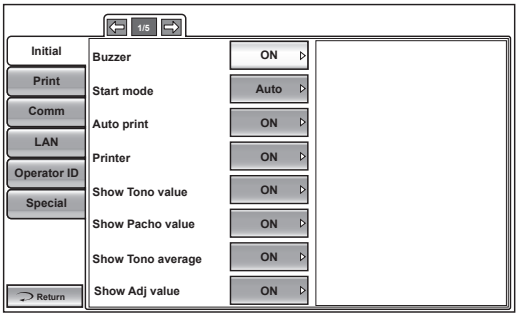
SPECIAL

SPECIAL is a mode for service engineers only; it can not be accessed.

INITIAL SETTING (INITIAL)

INITIAL contains settings related to the initial status upon power on. Measurement functions including measurement mode, auto mode and the number of continuous measurements, as well as the display of the measurement results, the date and language can be set.

1 Tap the category "Initial" of the "SETUP screen." The programmable items for the initial setting are displayed.



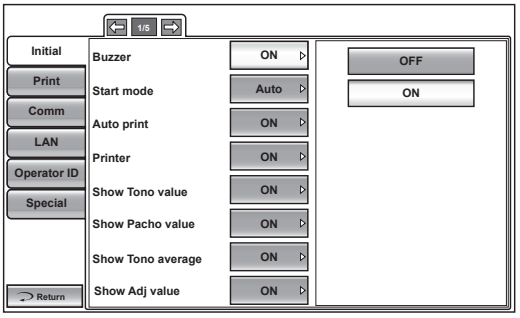
NOTES	To exit from this screen • Tap the [Return] button. • The "SETUP screen" is exited and the "MEASUREMENT screen" returns.

2 Tap the [NEXT PAGE] button, as needed, until the set item to be checked/changed is displayed.

SETTING THE BUZZER SOUND

It is possible to set whether or not to set the buzzer sound. Before shipment, the default setting is "ON" (Buzzer sounds).

1 Tap the [Current Condition] button of the set item display "Buzzer" in the "Initial" menu.



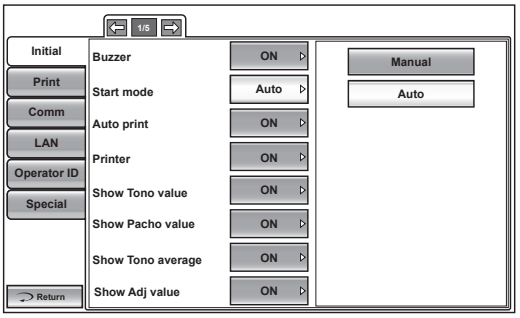
2 Tap the [Options] button and select "ON" (Buzzer sounds) or "OFF" (Buzzer does not sound).

3 The setting is completed and the changed setting is displayed on the [Current Condition] button.

SETTING THE START MODE

The start mode can be changed upon power on. Before shipment, the default setting is "Auto."

1 Tap the Current Condition button of the set item display "Start mode" in the "Initial" menu.



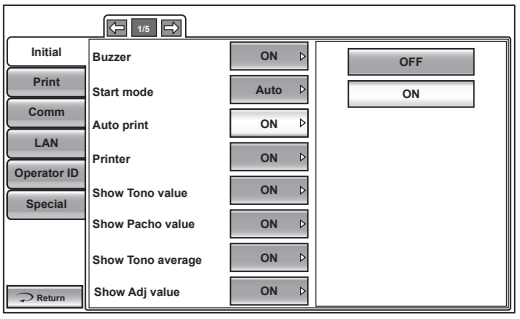
2 Tap the Options button and select "Manual" or "Auto".

3 The setting is complete.

SETTING AUTO PRINT

After measuring the right and left eyes under auto mode, the results can be printed automatically by the printer. Before shipment, the default setting is "ON" (Auto Print is performed).

1 Tap the Current Condition button of the set item display "Auto Print" in the "Initial" menu.



2 Tap the Options button and select "ON" (Auto Print is performed) or "OFF" (Auto Print is not performed).

3 The setting is complete.

NOTES	If the eye to be measured is set to the right/left eye only, the auto print function will be performed after the selected eye is measured. For the setting of the eye to be measured, see "MEASURING ONE EYE ONLY" on page 57.

SETTING THE PRINTER

The internal thermal printer can be set. Before shipment, the default setting is "ON."

1 Tap the Current Condition button of the set item display "Printer" in the "Initial" menu.

2 Tap the Options button and select "ON (Printing is performed.)" or "OFF (Printing is not performed.)"

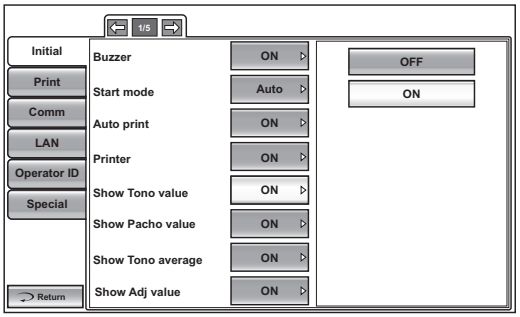
3 The setting is complete.

DISPLAYING THE TONO VALUE

It is possible to set whether or not to display the Tono value. Before shipment, the default setting is "ON."

1 Tap the Current Condition button of the set item display "Show Tono value" in the "Initial" menu.

2 Tap the Options button and select "ON" or "OFF."



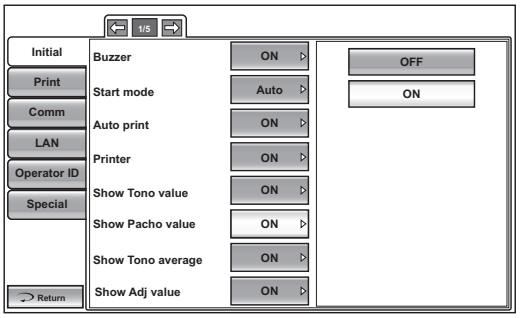
3 The setting is complete.

DISPLAYING THE PACHO VALUE

It is possible to set whether or not to display the Pacho value. Before shipment, the default setting is "ON."

1 Tap the Current Condition button of the set item display "Show Pacho value" in the "Initial" menu.

2 Tap the Options button and select "ON" or "OFF."



3 The setting is complete.

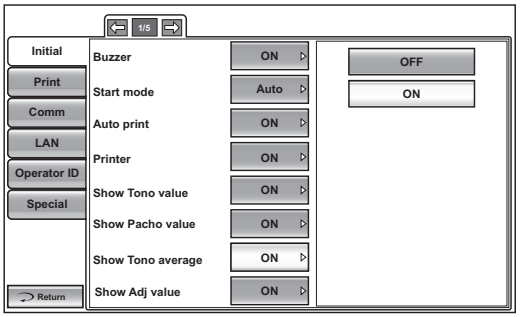
NOTES	Only in CT-1P.

DISPLAYING THE TONO AVERAGE VALUE

It is possible to set whether or not to display the Tono average value. Before shipment, the default setting is "ON."

1 Tap the (Current Condition) button of the set item display "Show Tono average" in the "Initial" menu.

2 Tap the (Options) button and select "ON" or "OFF."



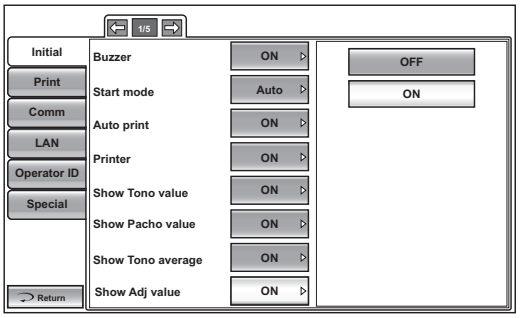
3 The setting is complete.

DISPLAYING THE ADJUSTED VALUE

It is possible to set whether or not to display the Adjusted value. Before shipment, the default setting is "ON."

1 Tap the (Current Condition) button of the set item display "Show Adj value" in the "Initial" menu.

2 Tap the (Options) button and select "ON" or "OFF."



3 The setting is complete.

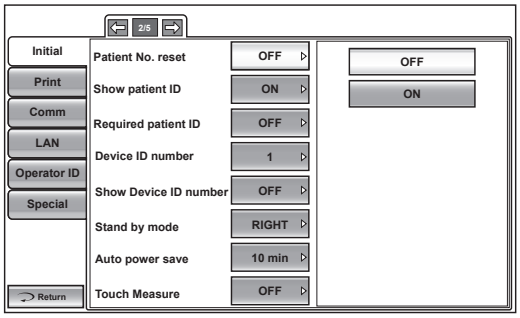
NOTES	Only in CT-1P.

RESETTING THE PATIENT NO.

It is possible to set whether or not to reset the patient No. upon power on. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "Patient No. reset" in the "Initial" menu.

2 Tap the Options button and select "ON" or "OFF."



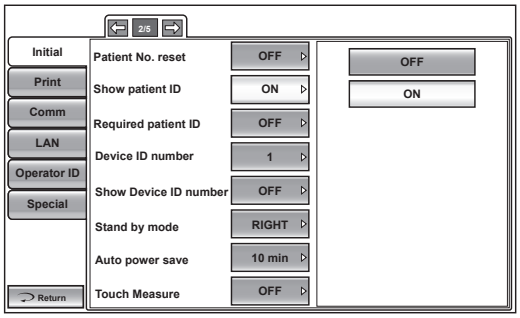
3 The setting is complete.

DISPLAYING THE PATIENT ID

It is possible to set whether or not to display the patient ID. Before shipment, the default setting is "ON."

1 Tap the Current Condition button of the set item display "Show patient ID" in the "Initial" menu.

2 Tap the Options button and select "ON" or "OFF."

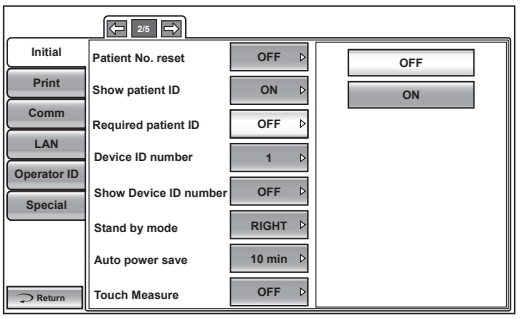


3 The setting is complete.

SETTING THE REQUIRED PATIENT ID

It is possible to set whether or not to require the patient ID. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "Required patient ID" in the "Initial" menu.



2 Tap the Options button and select "ON" or "OFF."

3 The setting is complete.

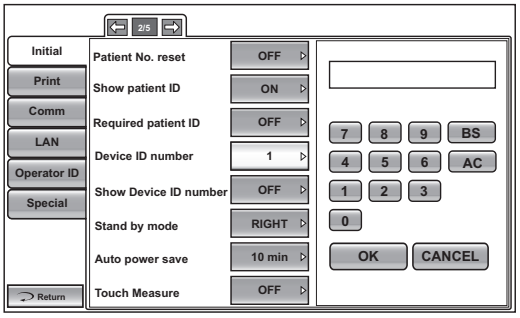
NOTES	When outputting, patient ID is not inputted, a warning is displayed if the setting is ON.

SETTING THE DEVICE ID NUMBER

The device ID number can be set. Before shipment, the default setting is "1".

1 Tap the Current Condition button of the set item display "Device ID number " in the "Initial" menu.

2 Enter the number with the ten-key display of the Options button.



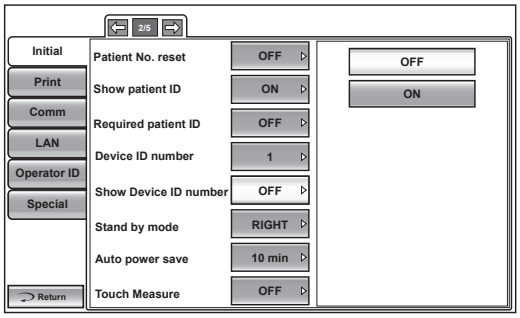
3 The setting is complete by tapping the OK button.

DISPLAYING THE DEVICE ID NUMBER

It is possible to set whether or not to display the device ID number. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "Show Device ID number" in the "Initial" menu.

2 Tap the Options button and select "ON (display)" or "OFF (do not display)."

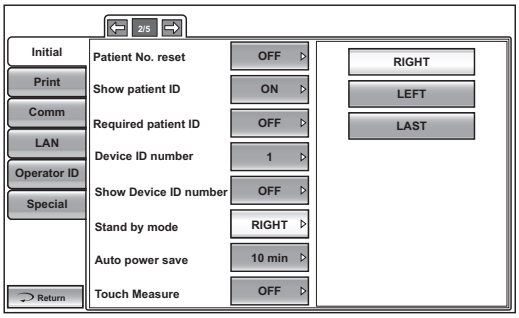


3 The setting is complete.

SETTING THE WAITING POSITION AFTER MEASUREMENT

It is possible to set the waiting position of the measuring head after finishing each measurement. Before shipment, the default setting is "RIGHT" (initial position for measuring right eye).

1 Tap the Current Condition button of the set item display "Stand by mode" in "Initial" menu.



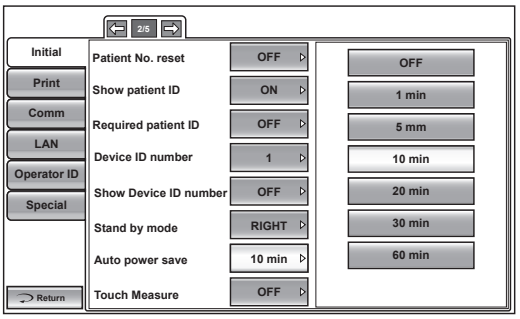
2 Tap the Options button and select the desired waiting position:
"RIGHT": Waiting at the initial position for right eye measurement
"LEFT": Waiting at the initial position for left eye measurement
"LAST": Waiting at the last position of the measured eye

3 The setting is complete.

SETTING THE AUTO POWER SAVE

The power save timer can be set. Before shipment, the default setting is "10 min" (to get to the power save status in 10min).

1 Tap the (Current Condition) button of the set item display "Auto power save" in the "Initial" menu.



2 Tap the (Options) button and select "OFF," "1 min," "5 min," "10 min," "20 min," "30 min" or "60 min".

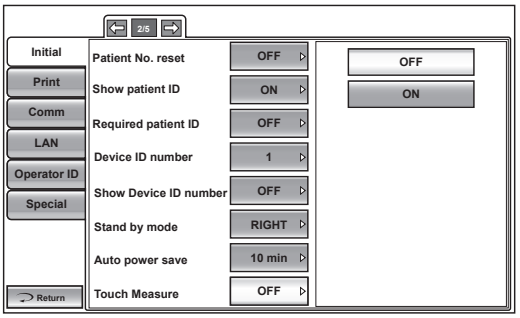
NOTES	When "OFF" is set, the power save function does not work.

3 The setting is complete.

SETTING THE TOUCH MEASUREMENT

On the manual measurement with patient eye enlargement, whether or not to perform touch measurement can be set. Before shipment, the default setting is "OFF".

1 Tap the (Current Condition) button of the set item display "Touch Measure" in the "Initial" menu.



2 Tap the (Options) button and select ON (to perform touch measurement) or OFF (not to perform touch measurement)."

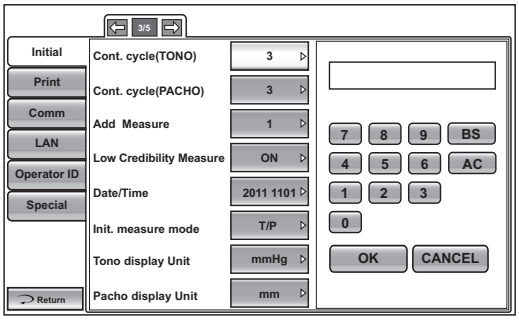
3 The setting is complete.

NOTES	When the setting is "OFF", alignment operation remains on the enlarged display.

SETTING THE NUMBER OF CONTINUOUS MEASUREMENTS (TONO)

The number of continuous measurements (TONO) can be set. Before shipment, the default setting is "3."

1 Tap the (Current Condition) button of the set item display "Cont. cycle(TONO)" in the "Initial" menu.



2 Tap the (Options) button and enter the number with the ten-key display.

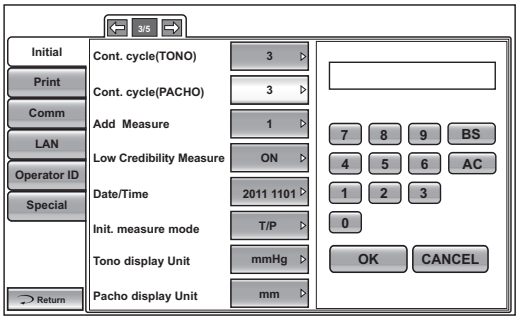
3 The setting is complete by tapping the (OK) button.

NOTES	The input number range is 2-10.

SETTING THE NUMBER OF CONTINUOUS MEASUREMENTS (PACHO)

The number of continuous measurements (PACHO) can be set. Before shipment, the default setting is "3."

1 Tap the (Current Condition) button of the set item display "Cont. cycle(PACHO)" in the "Initial" menu.



2 Tap the (Options) button and enter the number with the ten-key display.

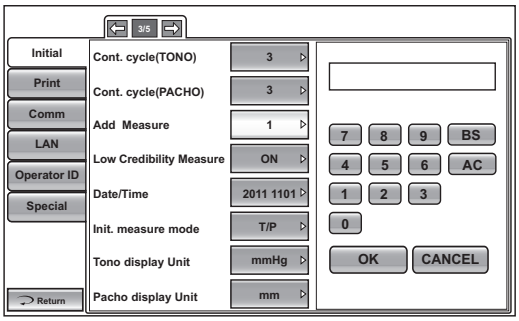
3 The setting is complete by tapping the (OK) button.

NOTES	• The input number range is 2-10. • Only in CT-1P.

SETTING THE ADDITIONAL MEASUREMENT

The number of additional measurements can be set. Before shipment, the default setting is "1".

1 Tap the (Current Condition) button of the set item display "Add Measure" in the "Initial" menu.



2 Tap the (Options) button and enter the number by the ten-key display.

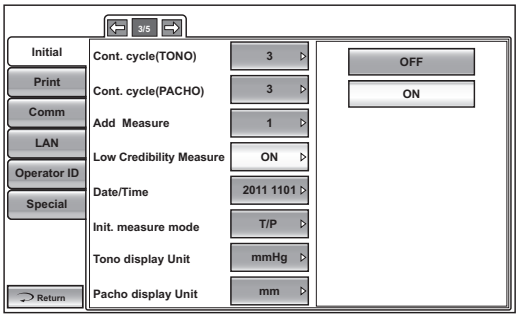
3 The setting is completed by tapping the (OK) button.

NOTES	The input number range is 0-99.

SETTING LOW CREDIBILITY MEASUREMENT

It is possible to set whether the value of low reliability is shown as an error, or the value is displayed. Before shipment, the default setting is "ON."

1 Tap the (Current Condition) button of the set item display "Low Credibility Measure" in the "Initial" menu.



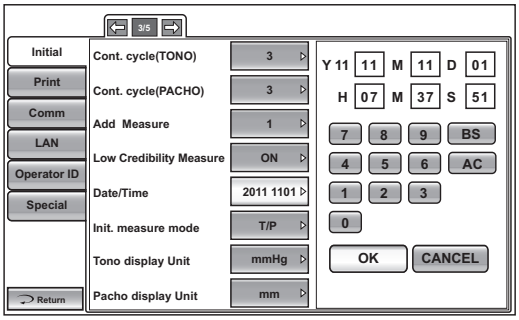
2 Tap the (Options) button and select ON (the value of low reliability is displayed) or OFF (the value of low reliability is shown as an error)."

3 The setting is complete.

SETTING THE DATE AND TIME (DATE/TIME)

Date and time can be set. Before shipment, the default setting is "Installation date/time".

1 Tap the Current Condition button of the set item display "Date/Time" in the "Initial" menu. The input screen is displayed.



2 Tap and select the item to be set (year, month, day, hour, minute, second), and enter the number with the ten-key display shown above.

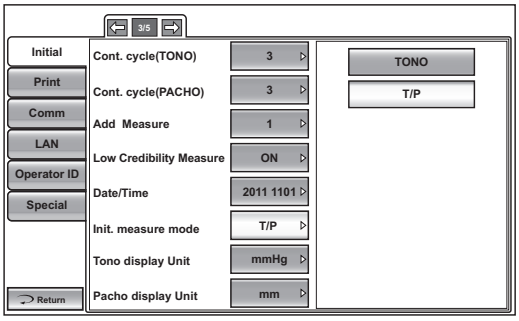
3 The setting is completed by tapping the OK button.

SETTING THE INITIAL MEASUREMENT MODE

The initial measurement mode, at power on, can be changed. Before shipment, the default setting is "T/P."

1 Tap the Current Condition button of the set item display "Init. measure mode" in the "Initial" menu.

2 Tap the Options button and select T/P or TONO.



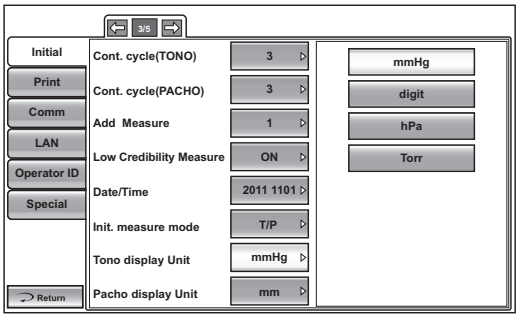
3 The setting is complete.

SETTING THE DISPLAY UNIT OF OCULAR PRESSURE MEASUREMENT VALUES (TONO)

The display unit of ocular pressure measurement values can be changed. Before shipment, the default setting is "mmHg."

1 Tap the Current Condition button of the set item display "Tono display Unit" in the "Initial" menu.

2 Tap the Options button and select "mmHg," "digit," "hPa", "Torr."



3 The setting is complete.

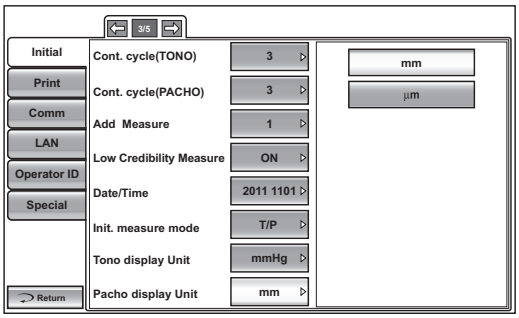
NOTES	When "hPa" is selected, hPa values and values after mmHg conversion will be displayed by "DISPLAYING ALL MEASUREMENT DATA." See page 54 for details.

SETTING THE DISPLAY UNIT OF CORNEA THICKNESS MEASUREMENT VALUES (PACHO)

The display unit of cornea thickness measurement value can be changed. Before shipment, the default setting is "mm."

1 Tap the Current Condition button of the set item display "Pacho display unit" in the "Initial" menu.

2 Tap the Options button and select "mm" or "μm."



3 The setting is complete.

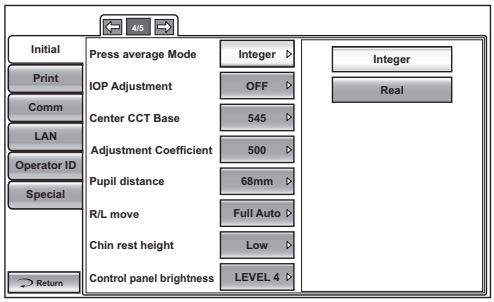
NOTES	Only in CT-1P.

SETTING THE AVERAGE VALUE OF THE OCULAR PRESSURE MEASUREMENT MODE

The display of average value of the ocular pressure measurement value can be changed. Before shipment, the default setting is "Integer."

1 Tap the Current Condition button of the set item display "Press average mode" in the "Initial" menu.

2 Tap the Options button and select "Integer" or "Real."

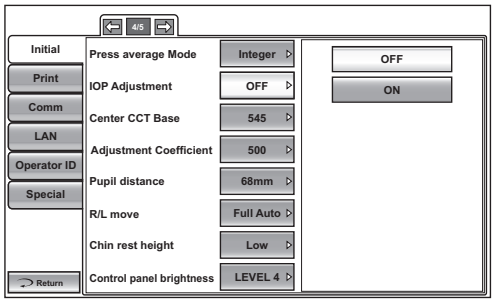


3 The setting is complete.

SETTING THE IOP ADJUSTMENT

Intraocular pressure adjustment can be set. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "IOP Adjustment" in the "Initial" menu.



2 Tap the Options button and select "OFF" or "ON."

3 The setting is complete.

The adjusted IOP can be determined by the equation below:

$$\text{Adjusted IOP}^{*1} = \text{Measured IOP} - (\text{Measured CCT} - A) \times (B/10000)^{*2}$$

A :Center CCT Base
B :Adjustment Coefficient
IOP : Intraocular pressure [mmHg]
CCT : Central corneal thickness [μm]

*1 :The adjusted IOP that is calculated on A and B is just a reference value.

*2 :A correction factor inputs a value integrally.

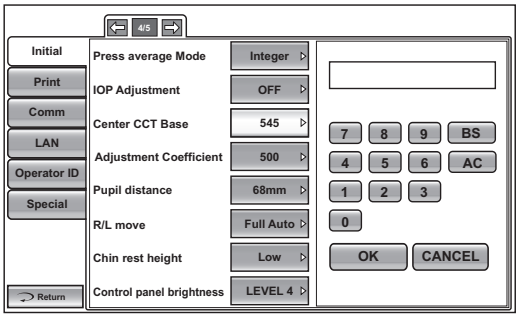
NOTES	Only in CT-1P.

SETTING THE CENTRAL CORNEA THICKNESS BASE VALUE

The central cornea thickness base value can be set.
Before shipment, the default setting is " 545."

1 Tap the (Current Condition) button of the set item display "Center CCT Base" in the "Initial" menu.

2 Tap the (Options) button and enter the number with the ten-key display.



3 The setting is complete by tapping the (OK) button.

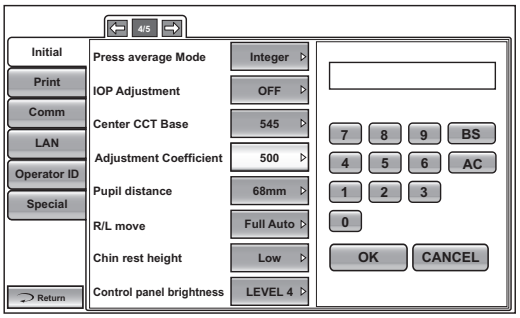
NOTES	Only in CT-1P.

SETTING THE ADJUSTMENT COEFFICIENT

The adjustment coefficient can be set.
Before shipment, the default setting is "500."

1 Tap the (Current Condition) button of the set item display "Adjustment Coefficient" in the "Initial" menu.

2 Tap the (Options) button and enter the number with the ten-key display.



3 The setting is complete by tapping the (OK) button.

NOTES	Only in CT-1P.

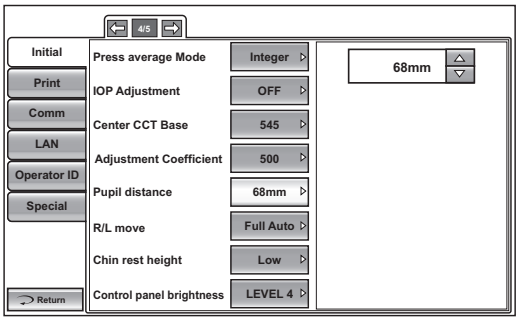
SETTING THE PUPIL DISTANCE

The pupil distance can be set.

Before shipment, the default setting is "68mm".

1 Tap the (Current Condition) button of the set item display "Pupil distance" in the "Initial" menu.

2 Tap the (Options) button and press the ▲ up or ▼ down button to set the value.



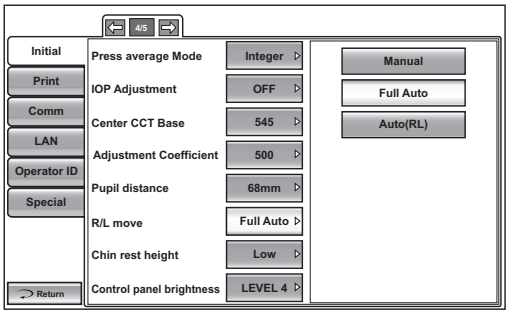
3 The setting is complete.

SETTING THE R/L MOVE

The R/L move can be set. Before shipment, the default setting is "Full Auto."

1 Tap the (Current Condition) button of the set item display "R/L move" in the "Initial" menu.

2 Tap the (Options) button and select "Manual", "Full Auto", "Auto(RL)."



3 The setting is complete.

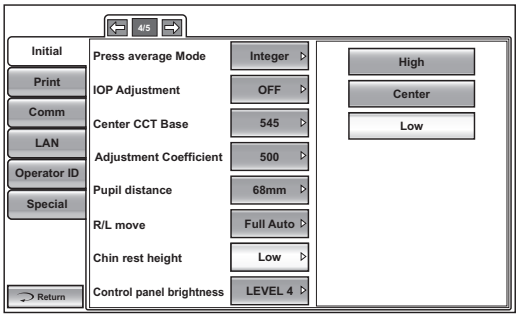
NOTES	• If the "Manual" is selected, move the measuring head to the other eye side by pressing the (R) button or (L) button. • If the "Full auto" is selected, the measuring head moves to the other eye side and a measurement is performed automatically. • If the "Auto(RL)" is selected, the measuring head moves automatically to the other eye side.

SETTING THE CHINREST HEIGHT

The Chinrest height can be set. Before shipment, the default setting is "Low."

1 Tap the Current Condition button of the set item display "Chin rest height" in the "Initial" menu.

2 Tap the Options button and select "High" , "Center" or "Low."



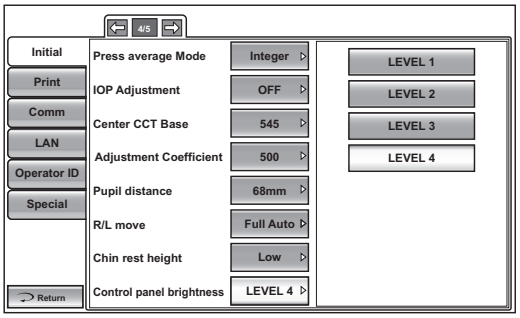
3 The setting is complete.

SETTING THE CONTROL PANEL BRIGHTNESS

The control panel brightness can be set in 4 steps. Before shipment, the default setting is "LEVEL 4."

1 Tap the Current Condition button of the set item display "Control panel brightness" in the "Initial" menu.

2 Tap the Options button and select the control panel brightness.



3 The setting is complete.

LEVEL 1 :The brightness of the Control panel is changed to the darkest setting of the four steps.

LEVEL 2 :The brightness of the Control panel is changed to the second darkest setting of the four steps.

LEVEL 3 :The brightness of the Control panel is changed to the second brightest setting of the four steps.

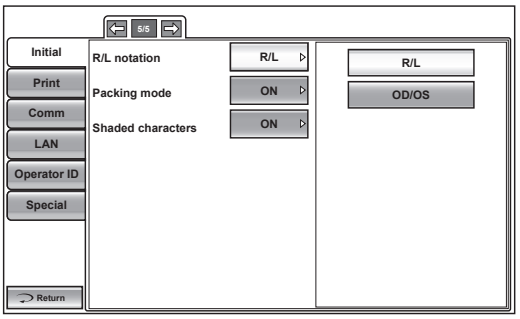
LEVEL 4 :The brightness of the Control panel is changed to the brightest setting of the four steps.

SETTING THE R/L NOTATION

The R/L notation can be set. Before shipment, the default setting is "R/L."

1 Tap the Current Condition button of the set item display "R/L notation" in the "Initial" menu.

2 Tap the Options button and select "R/L" or "OD/OS."



3 The setting is complete.

R/L : Right (Right eye), Left (Left eye)
OD/OS : Oculus Dexter (Right eye), Oculus Sinister (Left eye)

SETTING THE PACKING MODE

It is possible to set the machine to the mode for packing.

1 Tap the Execute button of the set item display "Packing mode" in the "Initial" menu.

2 A message "Please wait until packing mode is finished." will be displayed.

3 When the operation is complete, a message "Packing mode is finished. Please turn off the device." will be displayed.

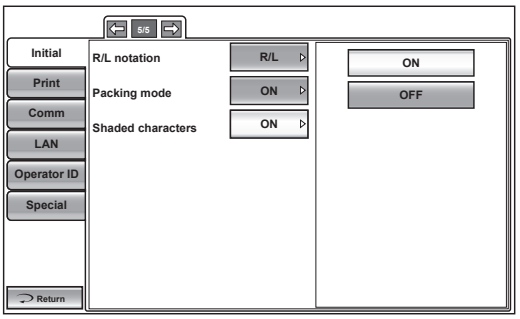
4 The setting is completed by shutting off the power.

SETTING THE SHADED CHARACTERS

The shaded characters can be set. Before shipment, the default setting is "ON".

1 Tap the Current Condition button of the set item display "Shaded characters" in the "Initial" menu.

2 Tap the Options button and select "ON" or "OFF."

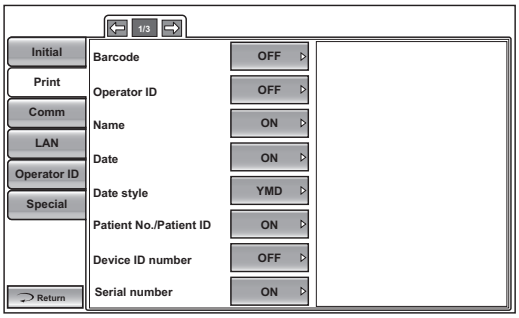


3 The setting is complete.

SETTING THE PRINTER

PRINT contains settings related to output from the printer.

1 Tap the index "Print" of the "SETUP screen." The set items for the print setting are displayed.



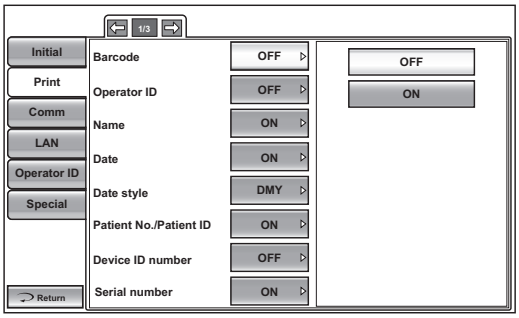
NOTES	To exit from this screen • Tap the (Return) button. • The "SETUP screen" is exited and the "MEASUREMENT screen" returns.

2 Tap the (NEXT PAGE) button, as needed, until the set item to be checked/changed is displayed.

SETTING THE BARCODE

The barcode can be displayed on the printout. Before shipment, the default setting is "OFF" (Do not print barcode).

1 Tap the (Current Condition) button of the set item display "Barcode" in the "Print" menu.



2 Tap the (Options) button and select "ON (Print Barcode)" or "OFF (Do not print Barcode)."

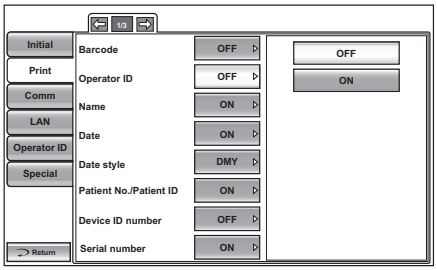
3 The setting is complete.

NOTES	The printed barcode is created from the Device ID number and the Patient No.

SETTING THE OPERATOR ID

The operator ID can be displayed on the printout. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "Operator ID" in the "Print" menu.



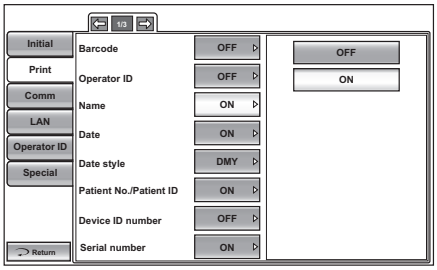
2 Tap the Options button and select "ON" or "OFF."

3 The setting is complete.

SETTING THE NAME COLUMN

The name column can be displayed on the printout. Before shipment, the default setting is "ON."

1 Tap the Current Condition button of the set item display "Name" in the "Print" menu.



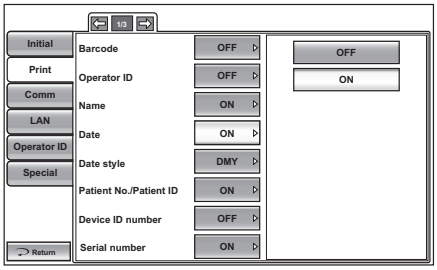
2 Tap the Options button and select "ON" or "OFF."

3 The setting is complete.

PRINTING THE DATE

The measurement date can be displayed on the printout. Before shipment, the default setting is "ON (Print date)".

1 Tap the Current Condition button of the set item display "Date" in the "Print" menu.



2 Tap the Options button and select "ON (Print date)" or "OFF (Do not print date)".

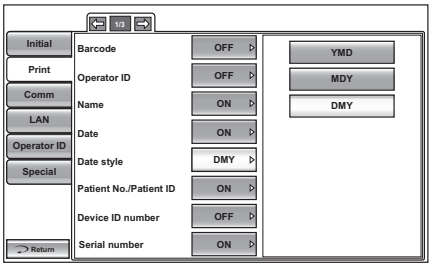
NOTES	When the built-in battery runs out, an incorrect date is printed. For battery change, contact your dealer or TOPCON at the address/phone shown on the back cover.

3 The setting is complete.

SETTING THE DATE STYLE

The date style can be set. Before shipment, the default setting is "DMY."

1 Tap the [Current Condition] button of the set item display "Date style" in the "Print" menu.



2 Tap the [Options] button and select "YMD", "MDY"" or "DMY."

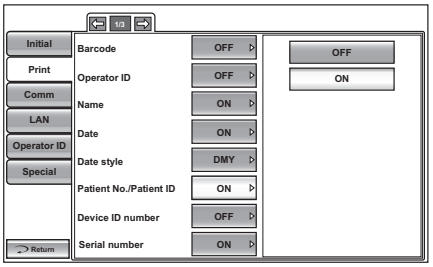
3 The setting is complete.

"YMD" :Print in year/month/day format
"MDY" :Print in month/day/year format
"DMY" :Print in day/month/year format

SETTING THE PATIENT NO./ PATIENT ID

The Patient No./Patient ID can be set. Before shipment, the default setting is "ON."

1 Tap the [Current Condition] button of the set item display "Patient No./Patient ID" in the "Print" menu.



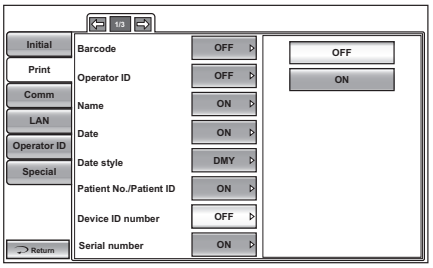
2 Tap the [Options] button and select "ON" or "OFF."

3 Setting is complete.

PRINTING THE DEVICE ID NUMBER

The device ID number can be displayed on the printout.
Before shipment, the default setting is "OFF (Do not print device ID number)".

1 Tap the [Current Condition] button of the set item display "Device ID number" in the "Print" menu.



2 Tap the [Options] button and select "ON (Print device ID number)" or "OFF (Do not print device ID number)".

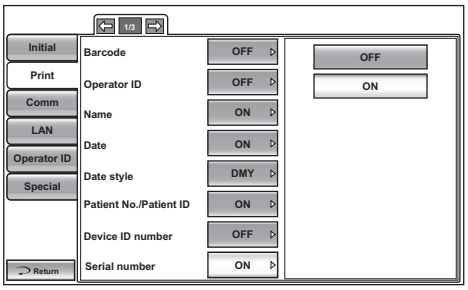
3 The setting is complete.

PRINTING THE SERIAL NUMBER

The serial number can be displayed on the printout.
Before shipment, the default setting is "ON."

1 Tap the Current Condition button of the set item display "Serial number" in the "Print" menu.

2 Tap the Options button and select "ON" or "OFF."



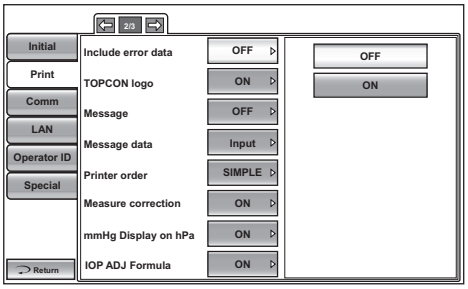
3 The setting is complete.

SETTING THE INCLUDING ERROR DATA

The including error data can be displayed on the printout. Before shipment, the default setting is "OFF".

1 Tap the Current Condition button of the set item display "Include error data" in the "Print" menu.

2 Tap the Options button and select "ON" or "OFF."



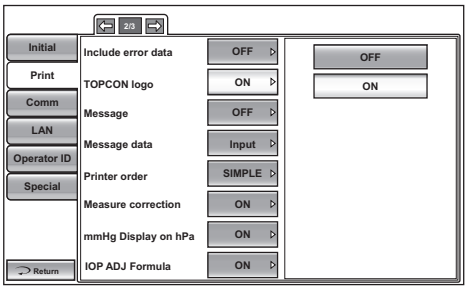
3 The setting is complete.

PRINTING THE TOPCON LOGO

The TOPCON logo can be displayed on the printout.
Before shipment, the default setting is "ON (Print TOPCON logo)".

1 Tap the Current Condition button of the set item display "TOPCON logo" in the "Print" menu.

2 Tap the Options button and select "ON" or "OFF."



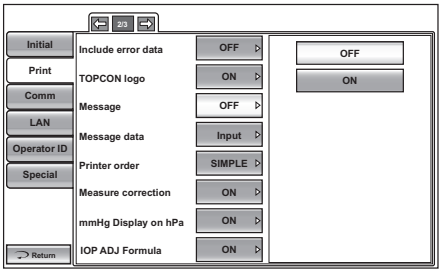
3 The setting is complete.

SETTING THE MESSAGE

It is possible to set the message data print to "ON" or "OFF." Before shipment, the default setting is "OFF".

1 Tap the (Current Condition) button of the set item display "Message" in the "Print" menu.

2 Tap the (Options) button and select "ON" or "OFF."



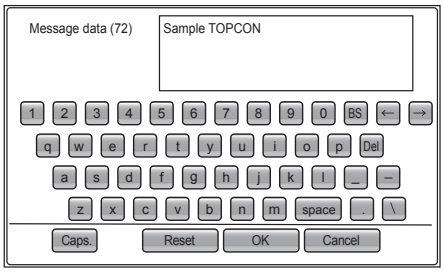
3 The setting is complete.

SETTING THE MESSAGE DATA

The message data can be set.

1 Tap the (Current Condition) button of the set item display "Message data" in the "Print" menu.

2 The message input screen is displayed, and enter desired character with keyboard.



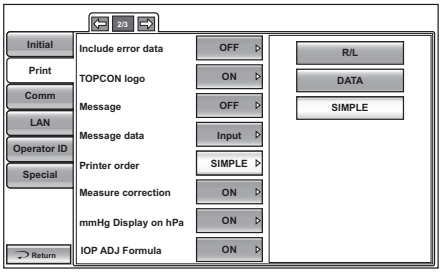
3 The setting is completed by tapping the (OK) button.

SETTING THE PRINTING ORDER

The printing order can be set. Before shipment, the default setting is "SIMPLE."

1 Tap the (Current Condition) button of the set item display "Printer order" in the "Print" menu.

2 Tap the (Options) button and select "R/L", "DATA" or "SIMPLE."



3 The setting is complete.

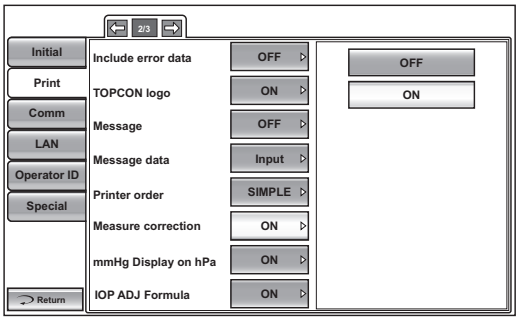
NOTES	• When the printing order is set to "SIMPLE," the measurement data of the latest three measurements are printed. • Once the printing order is set to "SIMPLE," the result of cornea thickness is printed in "μm" unit, even if display unit is set to "mm".

SETTING THE MEASUREMENT CORRECTION VALUE

The measurement correction value can be set. Before shipment, the default setting is "ON."

1 Tap the Current Condition button of the set item display "Measure correction" in the "Print" menu.

2 Tap the Options button and select "ON" or "OFF."



3 The setting is complete.

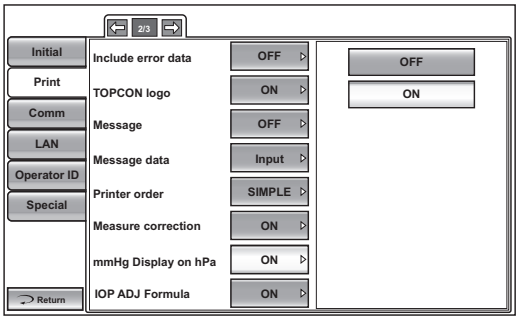
NOTES	• The measurement correction value is calculated by the calculation formula in "SETTING THE IOP ADJUSTMENT" in the "Initial" menu. For details, see page 80. • Only in CT-1P

SETTING THE mmHg DISPLAY UNIT ON hPa

When the "Display Unit of Ocular Pressure Measurement Value" in the "Initial" menu is "hPa," the operator can set whether or not to print out the intraocular pressure measurement values in both hPa and mmHg units. Before shipment, the default setting is "ON".

1 Tap the Current Condition button of the set item display "mmHg Display on hPa" in the "Print" menu.

2 Tap the Options button and select "ON" or "OFF."



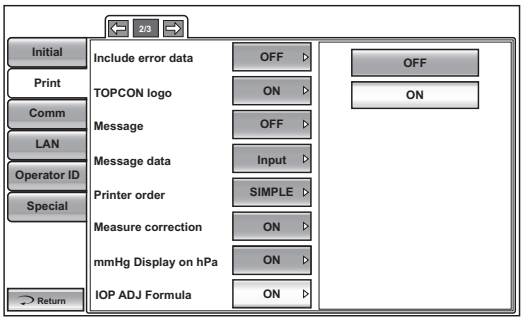
3 The setting is complete.

NOTES	When the printing order is set to "SIMPLE", the setup display unit of the display unit ocular pressure measurement values(TONO) is only printed, regardless of the setup the mmHg display unit on hPa.

SETTING THE IOP ADJ FORMULA

It is possible to set printing of Center CCT Base and Adjustment Coefficient for IOP ADJ formula. Before shipment, the default setting is "ON."

1 Tap the [Current Condition] button of the set item display "IOP ADJ Formula" in "Print" menu.



2 Tap the [Options] button and select "ON" or "OFF."

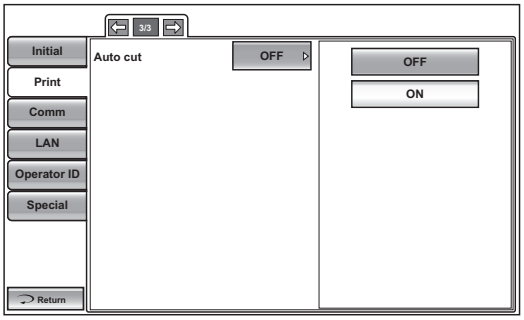
3 The setting is complete.

NOTES	Only in CT-1P.

SETTING THE AUTO CUT

It is possible to set auto cutting. Before shipment, the default setting is "ON."

1 Tap the [Current Condition] button of the set item display "Auto cut" in "Print" menu.



2 Tap the [Options] button and select "ON" or "OFF."

3 The setting is complete.

NOTES	When the Auto cut setting is off and you need to cut a printer form, the way is that erase the measurement value by tapping the [ALL CLEAR] button, and tap the [PRINT OUT] button.

DATA COMMUNICATION

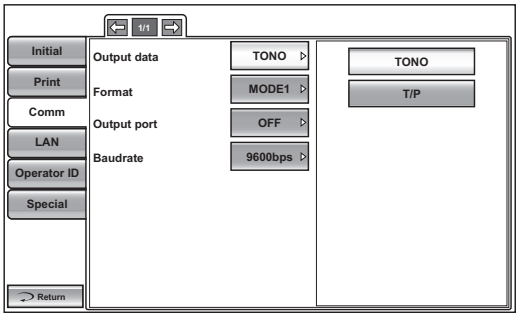
The COMM menu contains settings related to data output with the external device.

SETTING THE OUTPUT DATA STYLE

The output data style can be set. Before shipment, the default setting is "TONO."

1 Tap the [Current Condition] button of the set item display "Output data" in the "Comm" menu.

2 Tap the [Options] button and select "TONO" or "T/P".



3 The setting is complete.

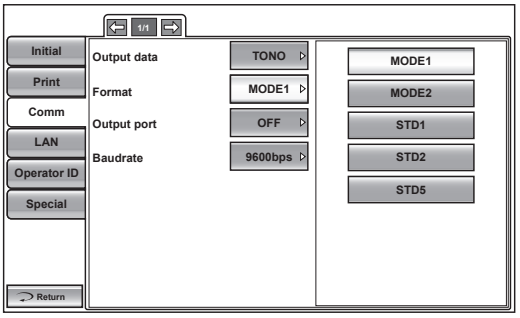
NOTES	Only in CT-1P.

SETTING THE FORMAT

The format can be set. Before shipment, the default setting is "MODE1."

1 Tap the [Current Condition] button of the set item display "Format" in the "Comm" menu.

2 Tap the [Options] button and select "MODE1", "MODE2", "STD1", "STD2" or "STD5".



3 The setting is complete.

MODE1 : Average value output format
MODE2 : Latest value output format
STD1 : TOPCON STD1 format
STD2 : TOPCON STD2 format
STD5 : TOPCON STD5 format

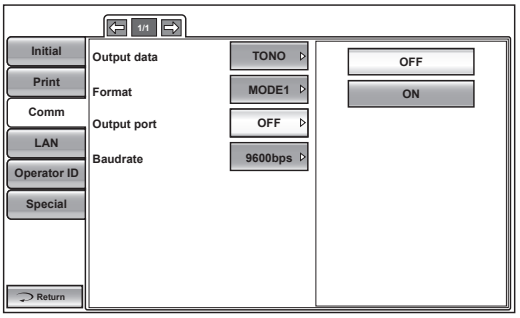
NOTES	According to the selected measurement mode of "SETTING THE OUTPUT DATA STYLE" in the "Data communication" menu, assignment of a format is possible.(only in CT-1P)

SETTING THE OUTPUT PORT

The output port can be set. Before shipment, the default setting is "OFF".

1 Tap the Current Condition button of the set item display "Output port" in the "Comm" menu.

2 Tap the Options button and select "ON" or "OFF."



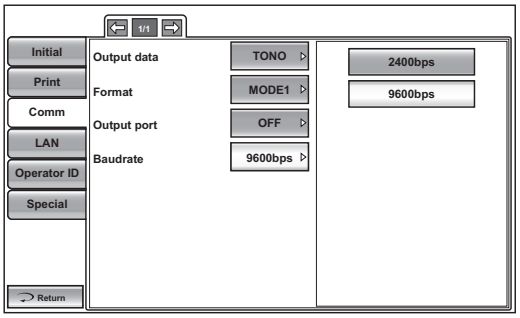
3 The setting is complete.

SETTING THE BAUDRATE

The baud rate can be set. Before shipment, the default setting is "9600bps."

1 Tap the Current Condition button of the set item display "Baudrate" in the "Comm" menu.

2 Tap the Options button and select "2400bps" or "9600bps."



3 The setting is complete.

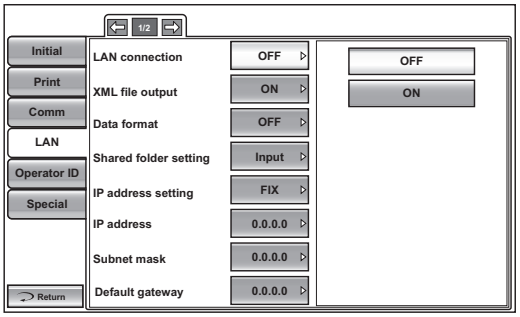
LAN CONNECTION

The LAN menu contains settings related to data output to the LAN.

SETTING THE LAN CONNECTION

The LAN connection can be set. Before shipment, the default setting is "OFF."

1. Tap the [Current Condition] button of the set item display "LAN connection" in the "LAN" menu.
2. Tap the [Options] button and select "ON" or "OFF."

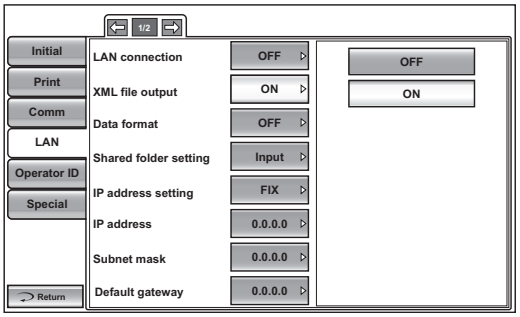


3. The setting is complete.

SETTING THE XML FILE OUTPUT

The XML file output can be set. Before shipment, the default setting is "ON."

1. Tap the [Current Condition] button of the set item display "XML file output" in the "LAN" menu.
2. Tap the [Options] button and select "ON" or "OFF".



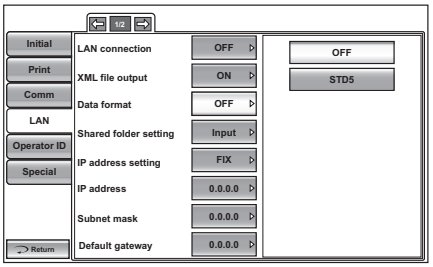
3. The setting is complete.

SETTING THE DATA OUTPUT FORMAT

The data output format can be set. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "Data format" in the "LAN" menu.

2 Tap the Options button and select "OFF" or "STD5."



3 The setting is complete.

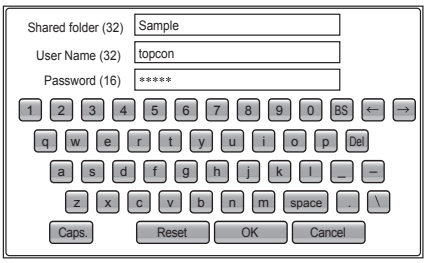
OFF :Data file is not outputted
STD5 :TOPCON STD5 format

SETTING THE SHARED FOLDER

The shared folder can be set. Before shipment, the default setting is "NULL"

1 Tap the Current Condition button of the set item display "Shared folder setting" in the "LAN" menu.

2 The message input screen is displayed. Enter the desired character with the keyboard.


Shared folder (32)
Sample
User Name (32)
topcon
Password (16)
*****
1 2 3 4 5 6 7 8 9 0 BS ← →
q w e r t y u i o p Del
a s d f g h j k l _ –
z x c v b n m space . \
Caps.
Reset
OK
Cancel

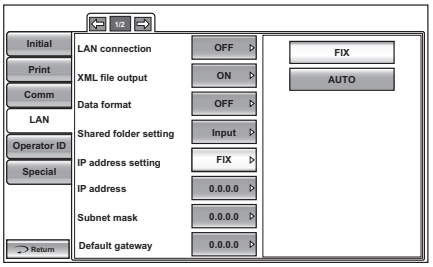
3 The setting is completed by tapping the OK button.

SETTING THE IP ADDRESS SETTING

The IP address setting can be set to "Fix" or "Auto". Before shipment, the default setting is "Fix."

1 Tap the Current Condition button of the set item display "IP address setting" in the "LAN" menu.

2 Tap the Options button and select "FIX (Set IP address to fix)" or "AUTO (Set IP address to auto".



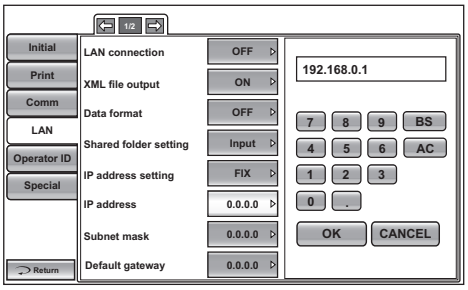
3 The setting is complete.

SETTING THE IP ADDRESS

The IP address can be set. Before shipment, the default setting is "0.0.0.0.".

1 Tap the [Current Condition] button of the set item display "IP address" in the "LAN" menu.

2 Tap the [Options] button and enter the number with the ten-key display.



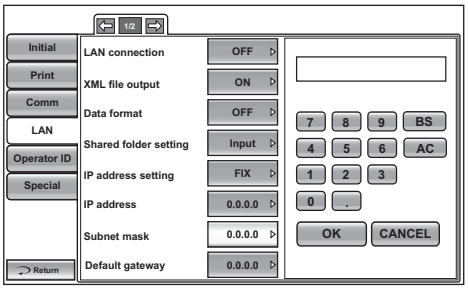
3 The setting is completed by tapping the [OK] button.

SETTING THE SUBNET MASK

The subnet mask can be set. Before shipment, the default setting is "0.0.0.0.".

1 Tap the [Current Condition] button of the set item display "Subnet mask" in the "LAN" menu.

2 Tap the [Options] button and enter the number with the ten-key display.



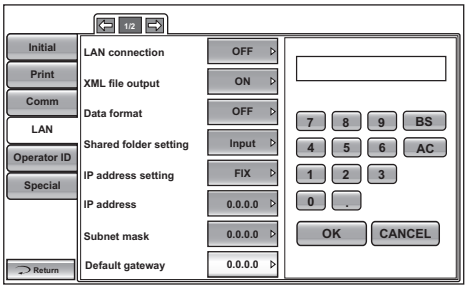
3 The setting is completed by tapping the [OK] button.

SETTING THE DEFAULT GATEWAY

The default gateway can be set. Before shipment, the default setting is "0.0.0.0.".

1 Tap the [Current Condition] button of the set item display "Default gateway" in the "LAN" menu.

2 Tap the [Options] button and enter the number with the ten-key display.

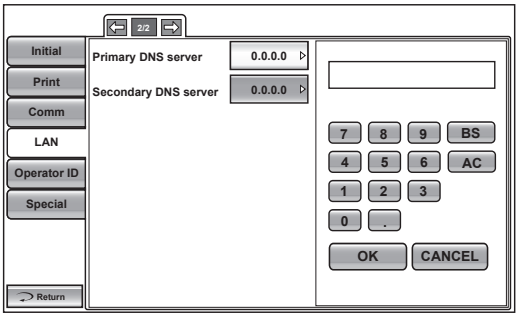


3 The setting is completed by tapping the [OK] button.

SETTING THE PRIMARY DNS SERVER

The primary DNS server can be set. Before shipment, the default setting is "0.0.0.0.".

1. Tap the [Current Condition] button of the set item display "Primary DNS server" in the "LAN" menu.
2. Tap the [Options] button and enter the number with the ten-key display.

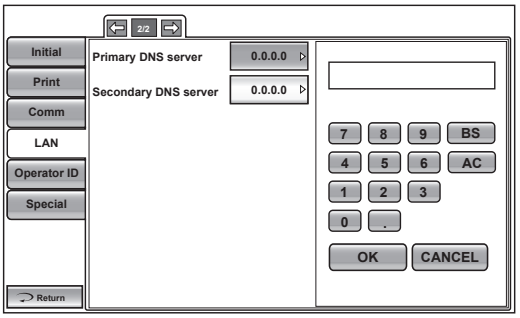


3. The setting is completed by tapping the [OK] button.

SETTING THE SECONDARY DNS SERVER

The secondary DNS server can be set. Before shipment, the default setting is "0.0.0.0.".

1. Tap the [Current Condition] button of the set item display "Secondary DNS server" in the "LAN" menu.
2. Tap the [Options] button and enter the number with the ten-key display.



3. The setting is completed by tapping the [OK] button.

OPERATOR ID

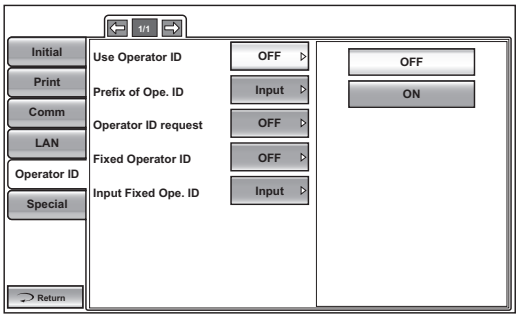
The Operator ID menu contains settings related to Operator ID.

SETTING THE USE OPERATOR ID FUNCTION

The "Use Operator ID" function can be set. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "Use operator ID" in the "Operator ID" menu.

2 Tap the Options button and select "ON" or "OFF".



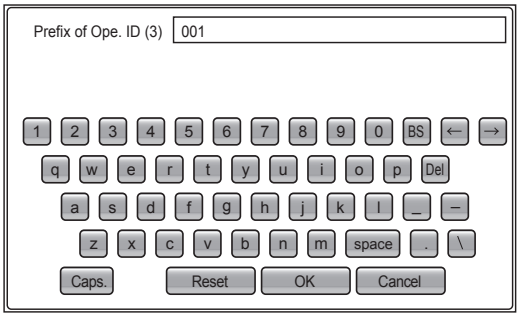
3 The setting is complete.

SETTING THE PREFIX OF OPERATOR ID FUNCTION

The prefix of operator ID can be set. Before shipment, the default setting is "NULL."

1 Tap the Current Condition button of the set item display "Prefix of Ope. ID" in the "Operator ID" menu.

2 Tap the Options button, and enter the desired character with the keyboard.



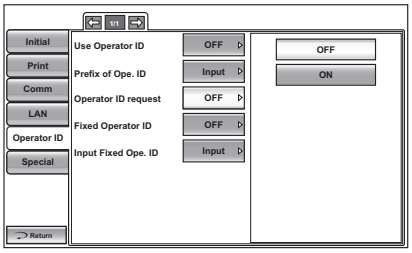
3 The setting is completed by tapping the OK button.

SETTING THE OPERATOR ID REQUEST

The operator ID request can be set. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "Operator ID request" in the "Operator ID" menu.

2 Tap the Options button and select "ON" or "OFF."



3 The setting is complete.

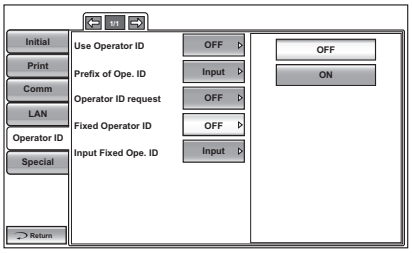
NOTES	When outputting, operator ID is not inputted, a warning is displayed if the setting of "Operator ID request" is ON.

SETTING THE FIXED OPERATOR ID

The fixed operator ID can be set. Before shipment, the default setting is "OFF."

1 Tap the Current Condition button of the set item display "Fixed operator ID" in the "Operator ID" menu.

2 Tap the Options button and select "ON" or "OFF".



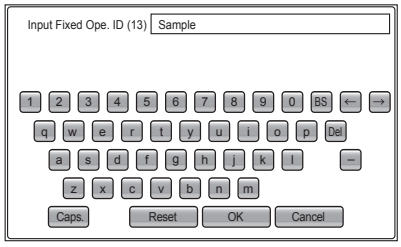
3 The setting is complete.

SETTING THE INPUT FIXED OPERATOR ID FUNCTION

The "Input the fixed operator ID" function can be set. Before shipment, the default setting is "NULL."

1 Tap the Current Condition button of the set item display "Input fixed Ope. ID" in the "Operator ID" menu.

2 Tap the Options button, and enter the desired character with the keyboard.



3 The setting is completed by tapping the OK button.

REFERENCE TECHNICAL DATA

THE IOP CORRECTION VALUES

WARNING	CCT Adjustments are not supported by performance data.

Table 1 below provides the IOP correction values.

Table 1 :IOP Correction Values

Corneal Thickness (μm)	Correction Values (mmHg)
405	7
425	6
445	5
465	4
485	3
505	2
525	1
545	0
565	-1
585	-2
605	-3
625	-4
645	-5
665	-6
685	-7
705	-8
Correction Values according to corneal thickness of 545 μm These correction values are modified from the work of Doughty and Zamen. This chart was reproduced from the Review of Ophthalmology, July 2002 Leon Hemdon, MD Duke University, Glaucoma Service, Pages 88, 89,90.	

NOTES	• See page 80 and 81 for details. • The above reference technical data is for reference data of CT-1P.

MAINTENANCE

DAILY CHECKUPS

CLEANING THE INSTRUMENT

- Dust on measuring window glass .. Blow off dust with a blower.
- Fingerprints and oil spots on measuring window glass..... Blow off dust with a blower and wipe the surface gently with a camera lens cleaner using clean gauze.
- Dirty instrument cover..... Wipe the surface with the attached silicon cloth or a dry soft cloth. Never use solvents or a chemical duster.

CLEANING THE MEASURING WINDOW GLASS

- To secure auto alignment and correct measurement values, clean the measuring window glass after each day's work.
- Clean the glass when "CLEAN THE MEASURING WINDOW GLASS" is displayed on the control panel screen.

CAUTIONS	To clean the measuring window glass, measuring nozzle and the glass inside the measuring nozzle, use ethanol. Using other chemicals may cause damage to the patient's eye during measurement.

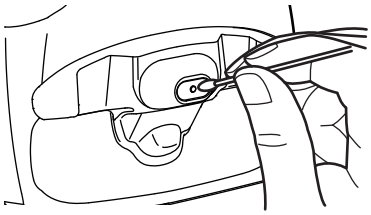
NOTES	• Do not apply unreasonable force to the measuring nozzle while cleaning. • To avoid problems, do not leave the cotton fibers inside. • Be sure to use only the attached applicator.

1 Prepare the ethanol.

2 Using a blower, remove dust and dirt from the glass surface.

3 Moisten the applicator with ethanol.

4 Wipe the glass surface lightly with the applicator, from the center outward.



Wiping the glass surface

5 Use a new applicator and wipe the glass surface in a similar manner; repeat this several times.

NOTES	To ensure thorough removal of grease from the measuring window glass, be sure to replace the applicator and use a new one for each of these repeated wiping operations.

6 The Cleaning is completed when grease is thoroughly removed.
If stains cannot be removed easily, call your dealer.

NOTES	When the measuring window glass becomes stained, "CLEAN THE MEASURING WINDOW GLASS" is displayed on the control panel screen.

CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE

- If there is any foreign matter on or around the measuring nozzle, it may enter and damage the patient's eye during the measurement. If there is any, clean the measuring nozzle.
- When the glass inside the measuring nozzle becomes stained, it makes the fixation target unclear, causing errors in auto alignment and measurement values. If the fixation target is unclear or measurement values with parentheses are frequent, clean the glass inside the measuring nozzle.
- Clean the glass when "CLEAN INSIDE NOZZLE/GLASS" is displayed on the control panel screen.

CAUTIONS	To clean the measuring window glass, measuring nozzle and the glass inside the measuring nozzle, use ethanol. Using other chemicals may cause damage to the patient's eye during measurement.

NOTES	• Do not apply unreasonable force to the measuring nozzle while cleaning. • To avoid problems, do not leave the cotton fibers inside. • Be sure to use only the attached applicator.

1 Prepare ethanol.

2 Moisten the applicator with ethanol.

3 Insert the applicator into the measuring nozzle, lightly touch the glass surface, and turn the applicator a few times.

4 Use a new applicator and wipe the glass surface in a similar manner; repeat this a few times.

NOTES	The used applicator contains grease and it only scatters grease if used again; the light transmittance is not improved at all. Be sure to replace the applicator and use a new one for each of these repeated cleaning operations.

5 If the fixation target is clearly seen, cleaning is completed. If stains cannot be removed easily, call your dealer.

NOTES	When the glass becomes stained, "CLEAN INSIDE NOZZLE/ GLASS" is displayed on the control panel screen.

CLEANING THE COMPONENTS THAT COME INTO CONTACT WITH THE PATIENT

When the forehead rest and chinrest become stained, use a neutral tableware detergent and warm water. Dip a soft cloth in the solution, squeeze out the excess water and then wipe off the stain.

DAILY MAINTENANCE

- For this instrument, dust may cause errors. When not in use, replace the measuring window cap and dust cover.
- When not in use, turn off the POWER switch.

NOTES	When using the dust cover, tap the [End] button and move the chinrest and measuring head to their last positions.

ORDERING CONSUMABLE ITEMS

- When ordering consumable items, tell the product name, product code and quantity to your dealer or TOPCON at the address listed on the back cover.

Product name	Product code
Chinrest tissue	40310 4082
Silicon cloth	44800 1001
Dust cover	42360 9002

Product name	Product code
Applicator	41601 8606
Printer paper	44800 4001
Fuse T 3AL 250V	T2400 0158A

USER MAINTENANCE ITEMS

Item	Inspection time	Contents
Inspection	Before using	• The instrument works properly. • The objective lens must be free of stains and/or flaws. • Confirm whether the foreign object is attached to the measuring nozzle and the area around the measuring nozzle. • Air check • Confirm that the safety stopper setting and measuring nozzle do not move to the patient's side beyond the safety stopper setting position.
Cleaning	When the part is stained	• Objective lens • External cover, control panel, etc.
Replacement	As required	• Fuse • Printer form

MANUFACTURER MAINTENANCE ITEMS

Item	Checking time	Contents
Cleaning each component	Within 12 months	• Cleaning outer covers • Checking the optical system • Cleaning POWER unit
Operation check	Within 12 months	• Checking the main body operation • Checking switches
Accuracy check	Within 12 months	• Confirming the ocular pressure measurement functions (using special tools) • Confirming the cornea thickness measurement functions (using special tools) (only in CT-1P)

BRIGHTNESS ADJUSTMENT OF THE CONTROL PANEL

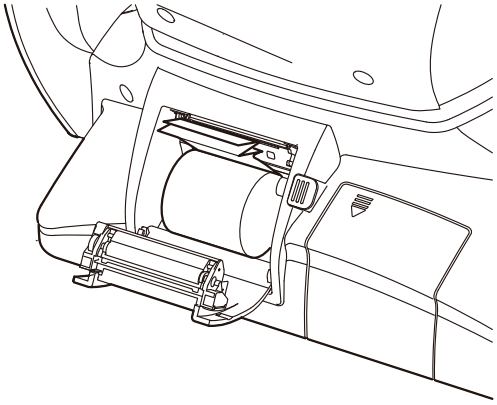
- The control panel is optimally adjusted when shipped.
- For control panel brightness adjustment, see "INITIAL (INITIAL SETTING)," "SETTING THE CONTROL PANEL BRIGHTNESS" (page 83).

PRINTER PAPER JAM

CAUTIONS	• To avoid failure or potential injury, do not open the printer cover while the printer is in operation. • To avoid potential injury in case of malfunction, including a paper jam, be sure to shut off the power before attempting to repair it. • To avoid potential injury, do not touch the printer body including metal parts or the paper cutter, while the printer is in operation or when replacing the printer paper.

NOTES	If the printer paper is jammed in the printer, printing will stop and the jam should be cleared.

1 Shut off the power and open the printer cover, take out the jammed paper pieces.



NOTES	After shutting off the power and removing the jammed printer paper, tap the PRINT OUT button to print out a blank sheet.

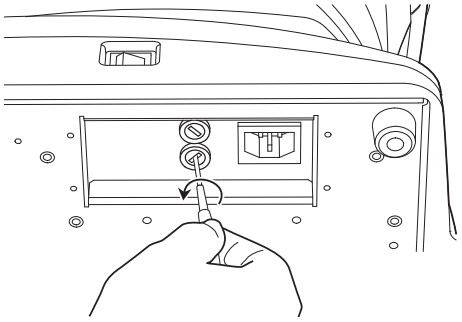
FUSE CHANGE

WARNINGS	• To avoid electric shock during fuse change, be sure to unplug the power cable before removing the fuse lid. Also, do not plug the power cable while the fuse lid is removed. • Always use the attached fuse (T 3AL 250V). Using any other type may cause malfunction and/or fire.

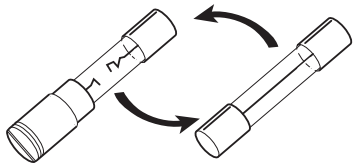
1 Make sure the power is off and the power cable is unplugged.

2 Tilt the body slowly so that the power switch comes up and the power inlet at the bottom can be seen.

3 Press the fuse holder with a screwdriver and turn it counter-clockwise.
The fuse holder can be taken out.

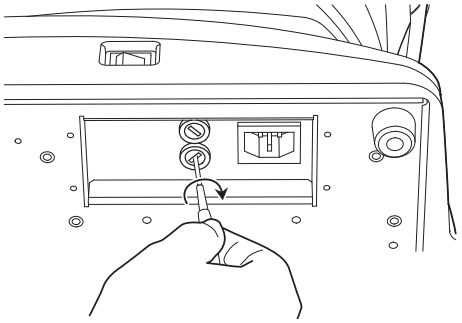


4 Replace the fuse with a spare one.



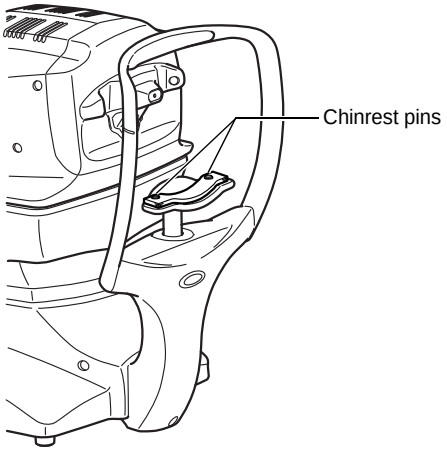
Replacing the fuse

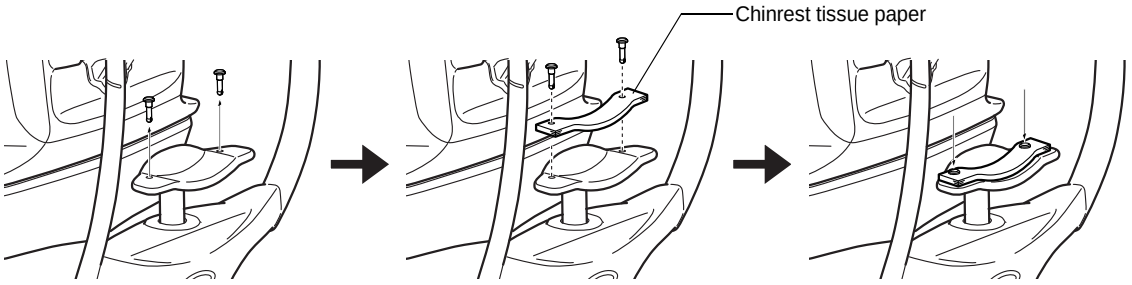
5 Press the fuse holder lightly with a screwdriver and turn it clockwise.
The fuse holder is set.



REPLACING THE CHINREST TISSUE PAPER

- When the chinrest tissue paper has run out, pull off the chinrest pins and replace it with new tissue paper.





MAINTENANCE

CLEANING THE COVER

CAUTIONS	Do not use or apply any aerosol-type cleaner near the instrument. If a drop of cleaner remains inside the measuring nozzle, the patient's eye may be injured during measurement.

NOTES	Do not clean plastic parts with solvents. Benzine, thinner, ether and gasoline may cause discoloring and decomposition.

1. If the cover, control panel, etc. get soiled, wipe the surface clean with a dry cloth.
2. If the cover is noticeably stained, wipe the surface with a damp cloth which is moistened in a tepid water solution of neutral detergent.

CLEANING THE CONTROL PANEL

NOTES	• Since the control panel screen is a touch panel, be sure to turn off the POWER switch before wiping. The touch panel will react and malfunction. • When the monitor cleaner has become dirty, wash it. When washing, rinse it thoroughly so no detergent is left. If any detergent remains, it may cause uneven wiping.

CONTAMINATION BY DUST

Remove the dust with a soft brush, and wipe with the attached monitor cleaner.

CONTAMINATION BY FINGERPRINTS

Wipe with the attached monitor cleaner.
If the stain still remains, moisten the monitor cleaner with water and then wipe off the stain.

BEFORE REQUESTING SERVICE

TROUBLE-SHOOTING OPERATIONS

MESSAGE LIST

"ERROR"	Displayed when the measurement is an error.
"OVER"	Displayed when the measurement is over.
"Finished"	Displayed when normal measurements are completed for the set measurement count.
"CLEAN THE MEASURING WINDOW GLASS"	Displayed when a blot is detected on the measuring window during TONO measurement. Clean the measuring window glass by referring to "CLEANING THE MEASURING WINDOW GLASS" on page 101.
"CLEAN INSIDE NOZZLE/GLASS"	Displayed when a blot is detected on the measuring window during TONO measurement. Clean the measuring nozzle and the glass inside the measuring nozzle by referring to "CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE" on page 102.
"Close printer cover"	The printer cover is open. Close the cover until it clicks.
"Paper end"	Printer paper is used up. Supply printer paper.
"Fatal Error!"	Displayed when the printer unit does not operate normally, such as the cutter does not work. Call the serviceman.
"Patient ID is required. Please set patient ID."	Displayed when the output operation is requested when the setting "Required patient ID" is ON but the patient ID is not inputted. Enter the patient ID and then request the output operation.
"Operator ID is required. Please set Operator ID."	Displayed when the output operation is requested when the setting "Operator ID request" is ON but the operator ID is not inputted. Enter the operator ID and then request the output operation.
"Please set the limit within 0 mm to 30 mm."	Displayed on the Safety Stopper screen, when the z-axis position is outside the 0-30mm.
"LAN hostname error"	Failed to resolve the host name of the destination (to be connected with the shared folder). Confirm the inputted host name or DNS server address.
"LAN mount error"	Failed to connect to the shared folder. Confirm the address, folder name, user name and password of the destination (to be connected with the share folder).
"Permission error of folder"	Failed to create the file. Confirm that write permission to the share folder is set correctly.
"LAN write error"	Failed to write to the file. Check the free space capacity at the save location.
"LAN stop error"	Failed to reset the LAN connection. Confirm that the LAN cable connection and the LAN setting are in the correct way.

"LAN restruct error"	Failed to reset the LAN connection. Confirm that the LAN cable connection and the LAN setting are in the correct way.
"Failed to get IP address."	Failed in IP address auto assignment. Set a fixed IP address, or check if the DHCP server is running.
"Unknown Error"	Displayed in case of a LAN error other than the LAN errors mentioned previously.
"IP address conflict"	Displayed when the IP address is duplicated.
"Previous measurements are left. Please press the Clear button."	Displayed when the output of all output-set data fails.
"Output not set"	Displayed when all output settings are OFF.
"RS232C DATAOUT"	RS232C data output is in process.
"RS232C SUCCESS"	RS232C data output is completed.
"RS232C FAIL"	RS232C data transmission failed.
"Check eyelid"	Displayed when the patient's eyelid covers the pupil. Tell the patient to open their eye as wide as possible.
"Please touch pupil on the screen"	Displayed when the XY position is not aligned. Touch the pupil and bring the screen to the pupil center.
"Please focus"	Displayed when the measuring nozzle position is too far. Press the forward button and adjust the measuring nozzle position.
"Nozzle at limit position"	Warns that the Z motor position has reached the nozzle limit.
"TOO CLOSE"	Warns that the measuring head is too close to the patient's eye.
"TOO FAR"	Warns that the measuring head is too far from the patient's eye.
"Please check the DATE/TIME"	The battery for the built-in clock has become worn out. Before using, confirm the time and date on the SETUP menu. If the message comes up frequently, call your service engineer.
"Chinrest Error"	Displayed when the chinrest is not correctly connected or not connected at all.
"Turn off the unit?"	Displayed to confirm whether to move the chinrest and measuring head to their last positions.
"Perform air check?"	Displayed to confirm whether to perform air check.
"Air checked. Press OK to continue."	Displayed when normal air check operation is confirmed.
"Confirm abnormal action(-) of air check"	Displayed when an anomaly occurred during air check. Check the measuring nozzle for any foreign matter.
"Confirm abnormal action(+) of air check"	Displayed when an anomaly occurred during air check. Check the measuring nozzle for any foreign matter.
"Range of Input value is 2 - 10"	Displayed when the measurement count is set out of the setting range. Set it within the input range.
"Please wait until packing mode is finished..."	Indicates that the packing operation is in process. Wait until it is completed.

"Packing mode is finished.Please turn off the device."	Indicates that the packing operation is completed. Switch off the machine.
"First Octet is 1 - 223 Range"	Displayed when the first octet of IP address, default gateway, primary DNS server or secondary DNS server is set to a value out of the specified input range.
"Value is irregular. Input valid value"	Displayed when the octet is set to a value out of the specified input range. Enter a value within the input range.
"The IP address is 0 - 255 Range"	Displayed when the subnet mask is set to a value off the input rule. Enter a value within the input rule.
"At least 3 characters are required for operator ID prefix."	Displayed when the input examiner ID prefix is less than 3 characters. Enter a prefix with 3 characters.
"Incorrect password"	Displayed when the password inputted to select a special mode is incorrect.
"Please don't place the face on the chinrest, to prepare for next measurement."	Displayed to confirm whether to place the face on the chinrest or not, because the measuring head shall move to the "stand by mode" position of the initial setting.

AIR CHECK

If a problem is suspected, do the air check.

If the result is "abnormal action(+)" or "abnormal action(-)," call your dealer or TOPCON at the address printed on the back cover of this manual. For details about the air check, see "AIR CHECK" on page 35.

TROUBLE-SHOOTING OPERATIONS

WARNINGS	To avoid electrical shock, do not open the instrument. All service should be performed by a qualified service engineer.

If a problem is suspected, use the following check list.

If following the instructions does not improve the condition, or if your problem is not included in the list, contact your dealer or TOPCON at the address on the back cover.

CHECK LIST

Trouble	Condition	Check	Page
Control panel does not turn on.	———	Is power cable unplugged?	28
		Is power cable connected to the instrument?	28
	Fuse blows when the power switch is turned on.	Call our service engineer.	106
Control panel is not clear.	The image is dark.	Confirm the brightness by "Control panel brightness."	64
A malfunction is found in a movable part.	———	Do not move it forcibly. Instead, call a service engineer.	33
Printing is not done.	Paper comes out without printing.	Confirm the direction of the paper roll. If the direction is incorrect, reset the paper to the proper direction.	30
	Paper does not come out.	If “PAPER END” displayed on the control panel, replenish the printer paper.	30

SPECIFICATIONS AND PERFORMANCE

SPECIFICATIONS AND PERFORMANCE

CT-1P

Ocular pressure measurement	Measuring range: 1 to 60mmHg (Display unit: 1mmHg step display, Average value:1mmHg/0.1mmHg step display) Measuring range: 1 to 30mmHg step display (switchable to 1 to 60mmHg step display)
Cornea thickness measurement	Measuring range: 0.4 to 0.75mm (Display unit: 0.001mm step display)
External I/O terminal	USB(for Import), RS232C(for Export), LAN(for Export)

CT-1

Ocular pressure measurement	Measuring range: 1 to 60mmHg (Display unit: 1mmHg step display, Average value:1mmHg/0.1mmHg step display) Measuring range: 1 to 30mmHg step display (switchable to 1 to 60mmHg step display)
External I/O terminal	USB(for Import), RS232C(for Export), LAN(for Export)

NOTES	Essential performance *Measurement must be performed correctly. Monitor screen display must not be distorted.

GENERAL INFORMATION ON USAGE AND MAINTENANCE

INTENDED PATIENT POPULATION

The patient who undergoes an examination by this instrument must maintain concentration for a few minutes and adhere to the following instructions:

- Fix the face to the chinrest, forehead rest.
- Keep the eye open.
- Understand and follow instructions when undergoing an examination.

INTENDED USER PROFILE

Since the Computerized Tonometer CT-1P/CT-1 is a medical device, the operation should be supervised by a physician.

ENVIRONMENTAL CONDITIONS FOR USE

Temperature:	+10°C to +40°C
Humidity:	30% to 90% RH(without condensation)
Atmospheric pressure:	700hPa to 1060hPa

STORAGE, USAGE PERIOD

1. Environmental conditions (without package)
   *Temperature : 10°C to 40°C
   Humidity : 10% to 95% (without dew condensation)
   Air pressure : 700hPa to 1060hPa
   * THIS INSTRUMENT DOES NOT MEET THE TEMPERATURE REQUIREMENTS OF ISO 15004-1 FOR STORAGE. DO NOT STORE THIS INSTRUMENT IN CONDITIONS WHERE THE TEMPERATURE MAY RISE ABOVE 40°C OR FALL BELOW 10°C.
2. When storing the instrument, ensure that the following conditions are met:
   (1) The instrument must not be splashed with water.
   (2) Store the instrument away from environments where air pressure, temperature, humidity, ventilation, sunlight, dust, salty/sulfurous air, etc. could cause damage.
   (3) Do not store or transport the instrument on a slanted or uneven surface or in an area where it is subject to vibrations or instability.
   (4) Do not store the instrument where chemicals are stored or gas is generated.
3. Normal life span of the instrument:
   8 years from delivery providing regular maintenance is performed [TOPCON data]

ENVIRONMENTAL CONDITIONS FOR PACKAGING IN STORAGE

(Product in its normal transport and storage container as provided by manufacturer)

Temperature	: -20°C to +50°C
Humidity	: 10% to 95%

ENVIRONMENTAL CONDITIONS FOR PACKAGING IN TRANSPORTATION

(Product in its normal transport and storage container as provided by manufacturer)
Temperature: : -40°C to +70°C
Humidity: : 10% to 95%

ELECTRIC RATING

Source voltage :AC100-240V
Frequency :50-60Hz
Power input :75VA

DIMENSIONS AND WEIGHT

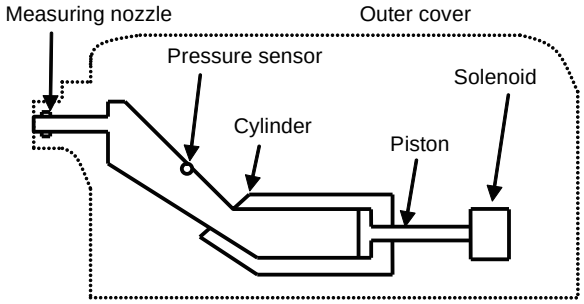
Dimensions: 286~326mm(W) × 445~526mm(D) × 466~615mm(H)
Weight : 19.5kg

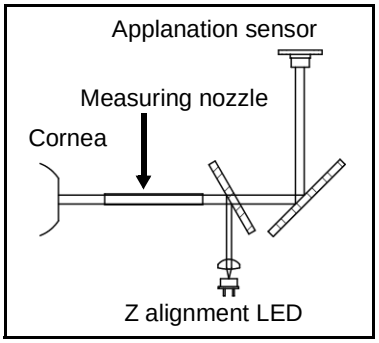
SAFETY DESIGNATIONS PER IEC 60601-1 STANDARD

- Type of protection against electric shocks: Class I
  The Class I equipment provides means to connect itself to the protective grounding system of utilities to thereby independently provide protection against electric shocks by keeping connectable metal components nonconductive in case of a failure in the basic insulation.
- Degree of protection against electric shocks: B type applied component
  The B type applied component provides the specified degree of protection against electric shocks with regard to the reliability particularly of leak current, patient measuring current and protective utility connection (in case of Class I equipment).
- Degree of protection against harmful intrusion of water (IEC 60529): IPX0
  This product does not provide protection against intrusion of water.
  (The degree of protection against harmful ingress of water defined in IEC 60529 is IPX0)
- Classification by sterilization/disinfection method specified by manufacturer
  This product does not have a component requiring sterilization/disinfection.
- Classification by safety of use in air/flammable anesthetic gas, oxygen or nitrous oxide/flammable anesthetic gas atmosphere
  - Equipment not suited for use in air/flammable anesthetic gas, oxygen or nitrous oxide/flammable anesthetic gas atmosphere
  - This product should be used in an environment free of flammable anesthetic gas and other flammable gases.
- Classification by operation mode
  Continuous operation refers to an operation under normal load conditions, within the specified temperature and without limitations on the operating time.

OPERATION PRINCIPLES

Ocular Pressure Measurement:
By ejecting air from the measuring nozzle to the cornea, detect by a pressure sensor the internal cylinder pressure required for the cornea to reach a prescribed deformed state (with a certain plane area), and calculate the ocular pressure value by computing. Irradiating the cornea by near infrared light using a Z alignment LED, receive the reflected beam by an applanation sensor and detect the cornea reaching a prescribed deformed state (with a certain plane area).

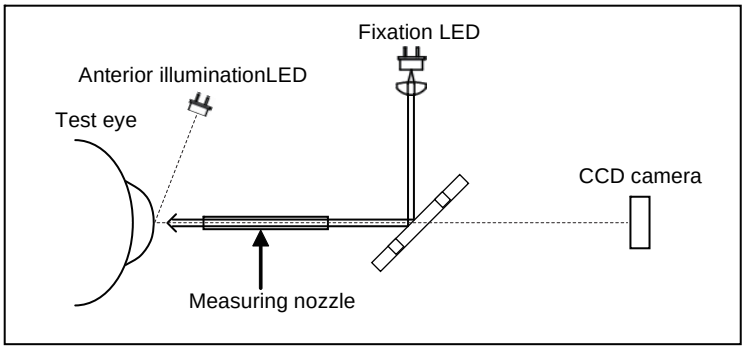




Cornea Thickness Measurement (only in CT-1P):
The slit light is projected onto the patient eye at a slant, and the corneal thickness is measured in reflected light from the corneal surface and corneal endothelium.

Auto Mode:
By illuminating the cornea using an XY alignment LED and a Z alignment LED, compute the reflected cornea image information received by the CCD camera unit and detect positions of the cornea and instrument. Based on the detected information, drive the X-axis drive motor, Y-axis drive motor and z-axis drive motor and move the main body to a position suitable for measurement. Detect that the main body is placed at a position suitable for measurement, measure the ocular pressure.
After finishing the measurement one eye, the main body, running the previously set distance, moves to the other eye, and starts detecting the positions of the cornea and instrument.
*In the case of manual mode, operations of main body movement and ocular pressure measurement are done by tapping the buttons displayed as software on the control panel.

Observation and Fixation Target Projection:
Illuminating the test eye by near infrared light using an anterior illumination LED, display the image received by the CCD camera unit on the control panel. Provide a visible light by a fixation LED, and the patient/examinee looks it as a fixation target through the measuring nozzle.



CHECKPOINTS FOR MAINTENANCE

1. Regularly maintain and check the equipment and parts.
2. When resuming the use after a long period of storage, verify that the instrument operates correctly and safely.
3. To ensure the correct reading, do not mar the measuring window with finger prints, dust, etc.
4. If the measuring window is soiled, clean it following the "CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE" instructions on page 102.

DISPOSAL

When disposing of the instrument and/or parts, follow local regulations for disposal and recycling.

NOTES

This symbol is applicable for EU member countries only.
To avoid potential damage to the environment and possibly human health, this instrument should be disposed of (i) for EU member countries - in accordance with WEEE (Directive on Waste Electrical and Electronic Equipment), or (ii) for all other countries, in accordance with local disposal and recycling laws.

This product contains a CRL Lithium Battery which contains Perchlorate Material-special handling may apply.
See http://www.dtsc.ca.gov/hazardouswaste/perchlorate/
Note; This is applicable to California, U.S.A. only

ELECTROMAGNETIC COMPATIBILITY

The product conforms to the EMC standard (IEC 60601-1-2 Ed3.0:2007)

a)MEDICAL ELECTRICAL EQUIPMENT needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the ACCOMPANYING DOCUMENTS.
b)Portable and mobile RF communications equipment can affect MEDICAL ELECTRICAL EQUIPMENT.
c)The use of ACCESSORIES, transducers and cables other than those specified, with the exception of transducers and cables sold by the manufacturer of the EQUIPMENT or SYSTEM as replacement parts for internal components, may result in increased EMISSIONS or decreased IMMUNITY of the EQUIPMENT or SYSTEM.
d)The EQUIPMENT or SYSTEM should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the EQUIPMENT or SYSTEM should be observed to verify normal operation in the configuration in which it will be used.
e)The use of the ACCESSORY, transducer or cable with EQUIPMENT and SYSTEMS other than those specified may result in increased EMISSION or decreased IMMUNITY of the EQUIPMENT or SYSTEM.

<table>
<tr><th colspan="3">Guidance and manufacturer's declaration - electromagnetic emissions</th></tr>
<tr><td colspan="3">The CT-1P/CT-1 is intended for use in the electromagnetic environment specified below.
The customer or the user of the CT-1P/CT-1 should assure that it is used in such an environment.</td></tr>
<tr><th>Emissions test</th><th>Compliance</th><th>Electromagnetic environment - guidance</th></tr>
<tr><td>RF emissions
CISPR 11</td><td>Group 1</td><td>The CT-1P/CT-1 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference with nearby electronic equipment.</td></tr>
<tr><td>RF emissions
CISPR 11</td><td>Class B</td><td rowspan="3">The CT-1P/CT-1 is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.</td></tr>
<tr><td>Harmonic emissions
IEC61000-3-2</td><td>Complies</td></tr>
<tr><td>Voltage fluctuations/
flicker emissions
IEC61000-3-3</td><td>Complies</td></tr>
</table>

Guidance and manufacturer's declaration - electromagnetic immunity			
The CT-1P/CT-1 is intended for use in the electromagnetic environment specified below. The customer or the user of the CT-1P/CT-1 should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge(ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and Voltage variations on power supply input lines IEC 61000-4-11	<5% U_t (>95% dip in U_t) for 0.5 cycle 40% U_t (60% dip in U_t) for 5 cycles 70% U_t (30% dip in U_t) for 25 cycles <5% U_t (>95% dip in U_t) for 5 sec.	<5% U_t (>95% dip in U_t) for 0.5 cycle 40% U_t (60% dip in U_t) for 5 cycles 70% U_t (30% dip in U_t) for 25 cycles <5% U_t (>95% dip in U_t) for 5 sec.	Mains power quality should be that of a typical commercial or hospital environment. If the user or the CT-1P/CT-1 requires continued operation during power mains interruptions, it is recommended that the CT-1P/CT-1 be powered from an uninterruptible power supply or battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_t is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration - electromagnetic immunity			
The CT-1P/CT-1 is intended for use in the electromagnetic environment specified below. The customer or the user of the CT-1P/CT-1 should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150kHz to 80MHz 3 V/m 80MHz to 2.5GHz	3 V 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the CT-1P/CT-1, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P}$ 80MHz to 800MHz $d = 2.3\sqrt{P}$ 800MHz to 2.5GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with the following symbol:
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the CT-1P/CT-1 is used exceeds the applicable RF compliance level above, the CT-1P/CT-1 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the CT-1P/CT-1. b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

Recommended separation distance between portable and mobile RF communications equipment and the CT-1P/CT-1

The CT-1P/CT-1 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the CT-1P/CT-1 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the CT-1P/CT-1 as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter**		
	150kHz to 80MHz $d = 1.2\sqrt{P}$	**80MHz to 800MHz** $d = 1.2\sqrt{P}$	**800MHz to 2.5GHz** $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

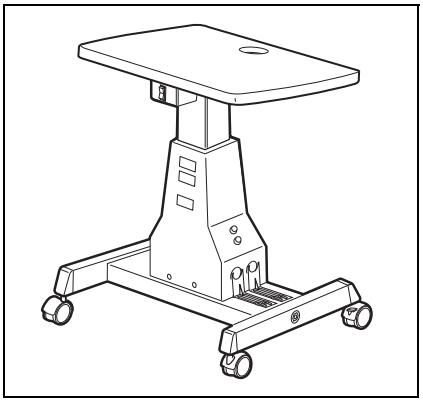
NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

REFERENCE MATERIAL

OPTIONAL ACCESSORIES

• Adjustable instrument table AIT-16
The table height can be adjusted to facilitate measurement.



Specifications
- Dimensions .....525(W)x490(D)mm
- Table height.....660~880mm
- Table size 490x500mm
- Weight.....approx. 23kg
- Power consumption ..150VA (100-120V, 220-240V)

SHAPE OF PLUG

Country	Voltage/frequency	Shape of plug
Mexico	110V/50Hz	Type C&E
Argentina	220V/60Hz	Type A
Peru	220V/60Hz	Type A
Venezuela	110V/50Hz	Type C&E
Bolivia & Paraguay	220V/60Hz	Type A (Most common) Type H (Infrequently)
Chile	220V/60Hz	Type A
Colombia	110V/50Hz	Type C
Brazil	220V/60Hz 127V/60Hz	Type A Type C
Ecuador	110V/50Hz	Type C&E
USA	120V/60Hz	Type A (Hospital Grade)
Canada	120V/60Hz	Type A (Hospital Grade)

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2. This Agreement shall be construed under the laws of Japan.

Please provide the following information when contacting us regarding questions about this instrument:

- Machine type: CT-1P, CT-1
- Manufacturing No. (Shown on the rating plate on the right side of the base.)
- Period of Usage (Please give us the date of purchase).
- Description of Problem (as detailed as possible).

COMPUTERIZED TONOMETER CT-1P
COMPUTERIZED TONOMETER CT-1

USER MANUAL
Version of 2012 (2012.03-100LW2)
Date of issue: 13th, March 2012

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COMPUTERIZED TONOMETER

CT-1P
CT-1

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